

**FEBRUARY
1954**

chemical processing

for men who manage



Dow Chemical's DR. LEALAND KEAN
PIONEER OF PROGRESS — IN STYLING
[See article on page 8]

Highlights

**to trap particles
microns & smaller . . . 8**
of 9 New Solutions in
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chemical materials

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chemicals 36**
Ideas from process in-
dustries briefed in this issue

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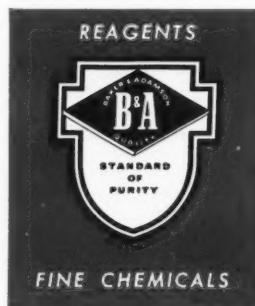
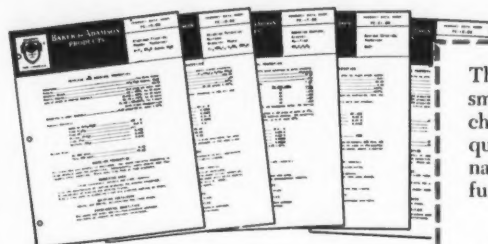
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A new technique enables scientists to trap airborne particles that weigh only about one-trillionth of a gram. Particles are then identified, weighed, counted, and filed away to help solve such fluffy problems as why clouds form and how rain begins. The MO (modus operandi) includes the use of a commercial filter material, chemical reagents, and, we suppose, a microscope.

How now, tinted cow

The bovine sisterhood is now contributing more than nutrition to our society. Working with chemists, cows have cooperated by producing casein (the major protein in milk) which has been found to be an excellent stabilizer for latex base paints. Bossy's chemistry allows latex paints to be stored for long periods, frozen, or mixed with hard water without any loss of beneficial properties.

Tough pipe touring

Glass pipe — so tough you can drive 10-penny nails with it — may be touring through your vicinity by deluxe trailer van in the near future. The product on display is Pyrex Brand Double-Tough Glass Pipe, a development of Corning Glass Works, Corning, N.Y. Nation-wide tour was started last September and in the next year will visit processing plants in all "48" and Canada.

High speed paper work

An automatic dispatch system which works without an operator, central desk, or complicated circuits has been announced by the Lamson Corp. of Syracuse, N.Y. By dialing the correct number on a carrier, you can dispatch it automatically to any station at speeds up to 30 fps.

The Airtube Automatic Switch system can service as many as 200 stations and will handle up to 600 carriers per hour. When something is marked "RUSH", it will.

When inquiring check CP 6158 on handy form, pgs. 2-3

chemical processing

(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 17

February, 1954

No. 2

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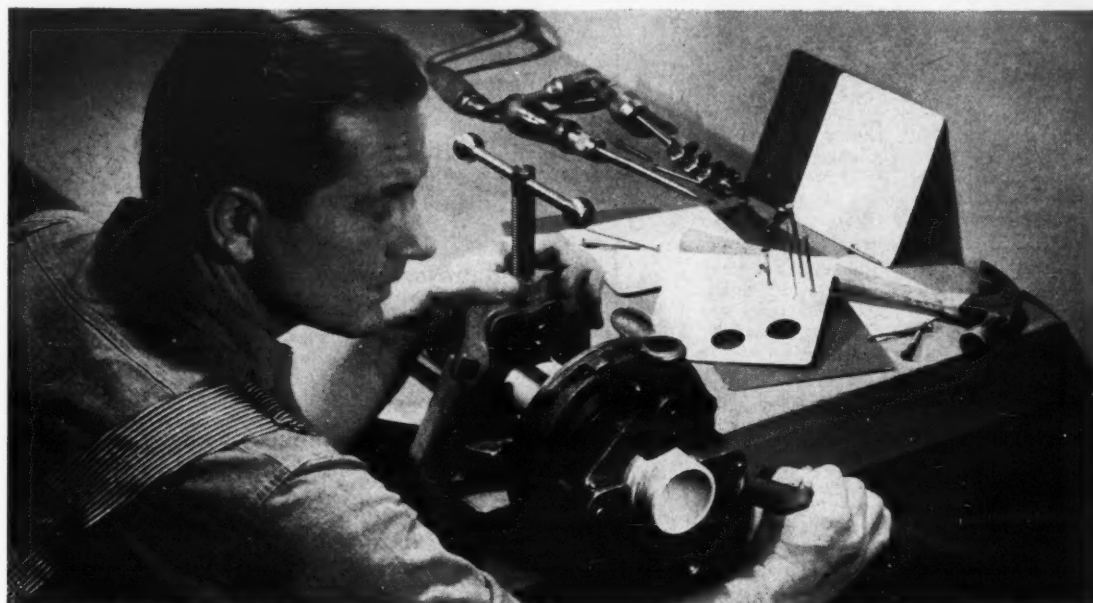
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In this Issue

How to use CP — part two



This column has previously emphasized one of the features of CHEMICAL PROCESSING which make it easier to read—sectionalization (see "editorial sections," this page). Whatever the reader's processing interests, he can quickly find the section he wants. We know that most of our readers are familiar with this "aid" and use it.

But we've been getting indications that another "helping hand" we offer is not being used as extensively . . . possibly because many readers don't know about it. Strange to say, this service was in "CP" before the magazine was sectionalized! In fact, it was in the first issue, published in September 1938.

The Product Directory has been in every issue since then (for its location in this issue, see item 2 at bottom right-hand corner of this page). This Directory, or index, is an alphabetical listing of all materials, processes, instruments, or equipment talked about in the editorial columns (and advertisements) of the issue.

Suppose a reader is specifically interested in solvents, filters, recorders, coatings . . . he can find what he wants, easily and rapidly, in the Directory. One could say that the sections of the magazine provide a broad breakdown of subject while the Directory provides a narrow breakdown. Of course, both are needed and are useful in their own ways.

Needless to say, the alphabetical product listing does not "just happen." Many hours are spent each month in doing the many operations associated with its preparation and printing. Sure, this adds to our operating costs, but we consider the Directory worth the time, effort, and money if it helps the reader find what he is interested in.

We sincerely hope that you find these services helpful. And we'd certainly like to have any constructive suggestions you may have to make.

Dana B. Berg
ASSOCIATE EDITOR

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special services for readers

1. When you want more information on processes, controls or developments of products discussed in this issue, see Reader Service slip opposite page 2

2. If you are looking for information on specific products, use the Product Director "Quicklocator" for all types of materials, instruments, processing equipment, etc. This Product Directory lists everything in this issue, with page references 221

3. If you want to subscribe to this magazine, see reader-qualification form opposite page 3

Our Dependence on Fundamental Research

DR. WILLIAM D. COOLIDGE

X-ray Consultant and Director Emeritus of the Research Laboratory, General Electric Company

Dr. Coolidge received his BS, with a major in electrical engineering, from MIT in 1896, and furthered his studies in Leipzig, Germany, where he received his PhD in 1899. Returning to the US, he went back to MIT for five years and did fundamental physico-chemical research. He joined the General Electric Company's research laboratory at Schenectady in 1905.



In 1932 he became director of the laboratory and in 1940 Vice President and Director of Research of the General Electric Company. In 1944, he retired from this post, but has remained with the company as X-ray consultant and Director Emeritus of the research laboratory.

Numerous honors have been conferred on Dr. Coolidge. He has received recognition for his work in the form of Doctor's degrees from colleges all over the world. He is an honorary member of many distinguished societies, and belongs to the National Academy of Sciences, American Academy of Arts and Sciences, Washington Academy of Sciences, American Association for the Advancement of Science, American Chemical Society, American Electro-chemical Society, American Institute of Electrical Engineers, American Physical Society, American Institute of Chemists, and the American Philosophical Society.

The high standard of living which we, in this country, enjoy today, is due in no small measure to the high quality of our basic products and to the nondestructive tests used to maintain that quality. If, in the future, our present high standard of living is to be maintained in the face of foreign competition, we will find that the job is harder than it has been. The world has rapidly grown smaller, and this makes it easier for others to learn about and adopt anything that is good in our methods. It's clear that the other fellow is learning very fast. A backward nation can, under pressure, make rapid headway.

The Japanese have made such headway since the war, and today I find some of their recent accomplishments in the optical field very impressive. In this field, we see them selling binoculars, microscopes, and telescopes in this country, in competition with those of US manufacture.

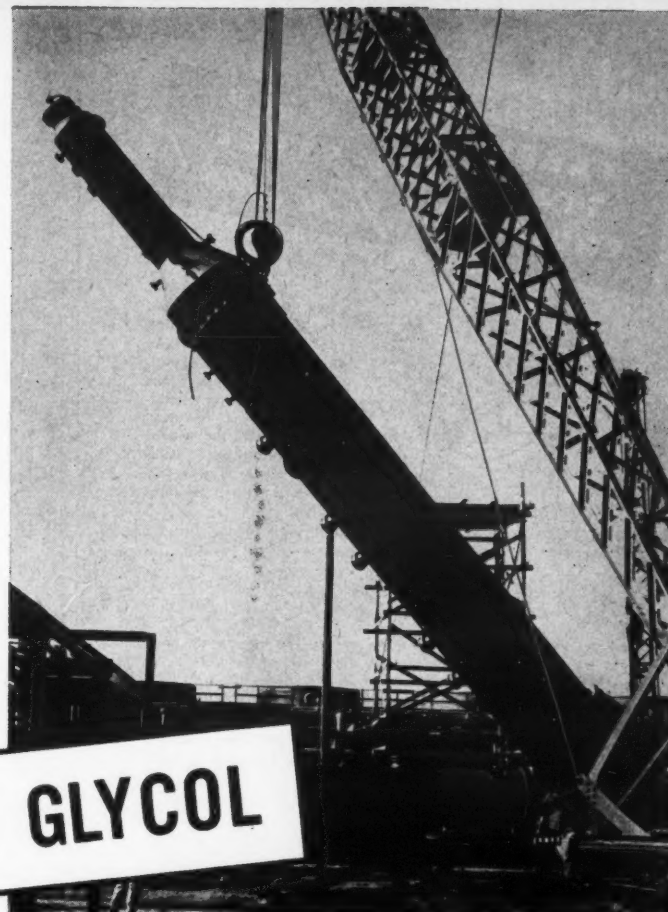
When the foreign-made product becomes as attractive as that made here, and when equipment and methods become such that the productivity of the worker in the foreign country is as great as it is here, and this while he has a very low standard of living, his competition will be more to be reckoned with.

I think that if our present standard of living is to be maintained and, as we hope, improved, the only real answer to such competition is continuous effort on our part to improve old devices and develop radically new ones, through fundamental research — research that can establish further new scientific facts and principles which can serve as a basis for new devices.

(Continued on page 219)

New
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boost
production
of
highest
quality...

Jefferson
DIETHYLENE GLYCOL



New production facilities at Jefferson's Port Neches plant include this giant reactor, shown here in process of installation.

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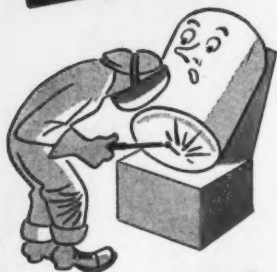


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PIONEERS OF PROGRESS

As surely as the 14th and 15th centuries saw a renaissance in the arts, the past 50 years have seen a renaissance in man's ability to produce the material needs and luxuries of life. Who can say which of these has had the more profound effect? Dr. Leland Doan and the other men of Dow Chemical Company are part of this "second renaissance" because of . . .



Dr. Leland Doan

STYRENE and POLYSTYRENE — Building Blocks of the Future

It was World War II that forced styrene into prominence. Not that polystyrene and synthetic rubber had only wartime markets . . . styrene is still one of the highest tonnage organic chemicals today. Dr. Leland I. Doan, president of the Dow Chemical Company, says, "Despite the high volume use that polystyrene and other plastics have already attained, we are still only at the beginning of their utilization."

But though polystyrene and GR-S rubber have become "chemical heavyweights" in a peacetime market, their production during the war stands as a tribute to the Dow team. In a matter of months, despite priority strangleholds and wartime red tape, they built a 200 million pound a year giant where only a small plant had stood before.

Dow first entered the styrene picture in 1929. Four years earlier styrene production was started both here and abroad, but these efforts did not lead to any conspicuous success. The initial work at Dow was done in the Organic Research Laboratory under Dr. E. C. Britton. His idea was that polymerized styrene would have excellent properties as an electrical insulator. Use of polystyrene as insulation for radar equipment more than ten years later bore out his theory.

Another reason for Dow's interest in styrene was the work which Dr. J. J. Grebe, Dr. R. H. Boundy, J. H. Reilly, and others had already done on cracking hydrocarbons to form unsaturates. When researchers began to think of the large volume of ethylene which could be produced inexpensively, they were anxious to find a profitable outlet for it. The answer to that line of thinking seemed to lie in producing cheap ethylbenzene and dehydrogenating it to make styrene.

Attempts to do this, however, proved that the simplicity which seemed so apparent in the method was illusory. It was only after more than three years of hard work in the pilot plant that a satisfactory product could be made. Purity and color of product were constant bugaboos in these early attempts. Even efforts to turn out a pure styrene by fractionating the product wasn't a simple matter — the monomer too often found conditions excellent for turning into the polymer in the process.

Early, styrene was made by forming ethylbenzene, chlorinating it and hydrolyzing one of the isomers to β -phenylethyl alcohol. This alcohol could be dehydrated to yield styrene. One attraction of this method was the availability of cheap chlorine in quantity. But even though this process was used on a small scale, it did not prove as economical as methods developed later. Chief fault of chlorination was that large amounts of useless by-products were produced.

Then R. R. Dreisbach, working in the Physical Research Laboratory under Dr. Grebe, found a practical way of producing styrene by dehydrogenating ethylbenzene. J. E. Pierce contributed heavily to the cracking methods research. Employing superheated steam to supply the heat for cracking, this dehydrogenation process was carried through the pilot plant stages and became the basis for commercial production.

The early laboratory process — side chain chlorination followed by dehydrochlorination — was also carried to the pilot plant stage by a group under J. W. Britton. And chlorination remained a serious contender for the commercial process from 1932 to 1937. By that time dehydrogenation had won the

contest and Walter E. Roush finished up his work on pilot planting and swung over to commercial production. Selling price of the styrene first produced by the commercial process was about 88 cents a pound.

Pearl Harbor Changes the Pace

Production of styrene at the Midland plant continued to inch along through the pre-war years. A new plastic, polystyrene, was exhibited at the San Francisco World's Fair in 1939. The world, however, did not immediately beat a path to the door at Midland, and research expense continued to be greater than sales.

Cumulative sales of styrene and polystyrene did not equal cumulative research expense until 1940; not until 1946 did the cumulative income pay cumulative expenses of the whole project.

But more important than the fact that styrene was becoming known was the fact that by this time bugs were pretty well cleared out of the process. Under the direction of Dr. R. H. Boundy, now Director of Research, Dr. J. J. Grebe, W. E. Roush, J. L. Amos, J. E. Pierce, J. C. Frank, R. R. Dreisbach, Dr. Sylvia Stoesser, and others, work had advanced to point where styrene could be purified without polymerizing. No single magic trick made this possible; a combination of ideas — use of inhibitors, low pressure-low temperature distillation, special distillation columns, exclusion of air from the process — comprised the necessary know-how. Nor did work stop on developing new and better processes for making the material.

It was fortunate, indeed, that so much had been accomplished when the sudden smash at Pearl Harbor plunged us into war. Dow had not only worked out the styrene process, but also had the only commercial operations producing butadiene. Together these chemicals produced the GR-S synthetic rubber which made up for the natural rubber sources we lost. Besides this, polystyrene filled an important niche in electrical insulating jobs — and World War II could almost be called an electrical and electronic war.

For the story of Vinyltoluene developed by Dow, see article starting on page 18

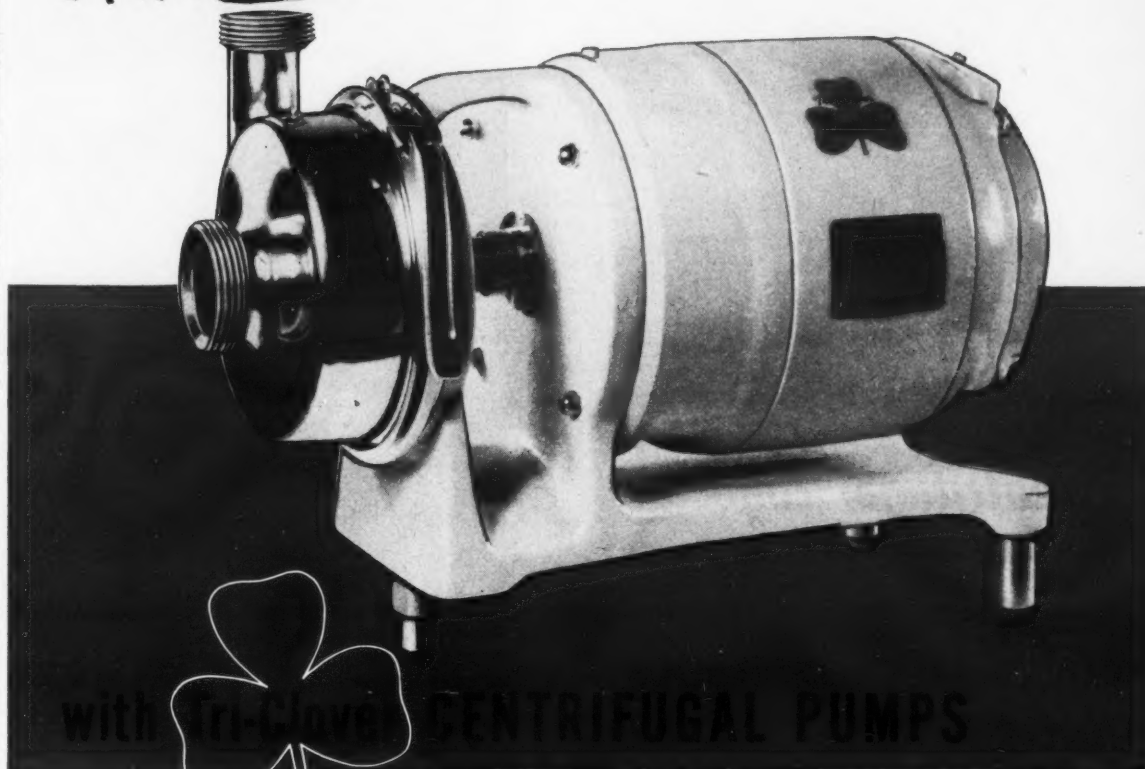
What Dow lacked, of course, was the capacity to supply all the styrene needed immediately. In order for our country to meet the surge of demand, Dow licensed its process to Rubber Reserve Company, a war-time government agency, for use in government-owned plants operated by various private companies. By 1944, total production of styrene by American producers was 200 million pounds a year . . . and styrene was selling at less than one quarter of the original commercial price.

When the war eased up "emergency" demands, D. L. Gibb in Sales and W. C. Goggin in Technical Service faced the tough job of finding a peacetime outlet for the tremendous capacity that had been

(Continued on page 217)



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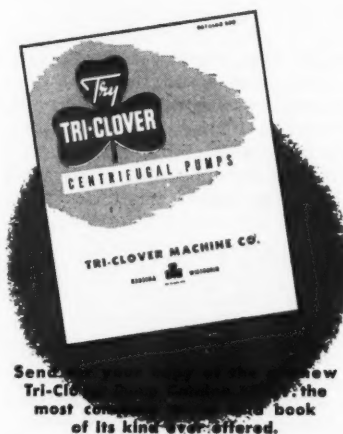


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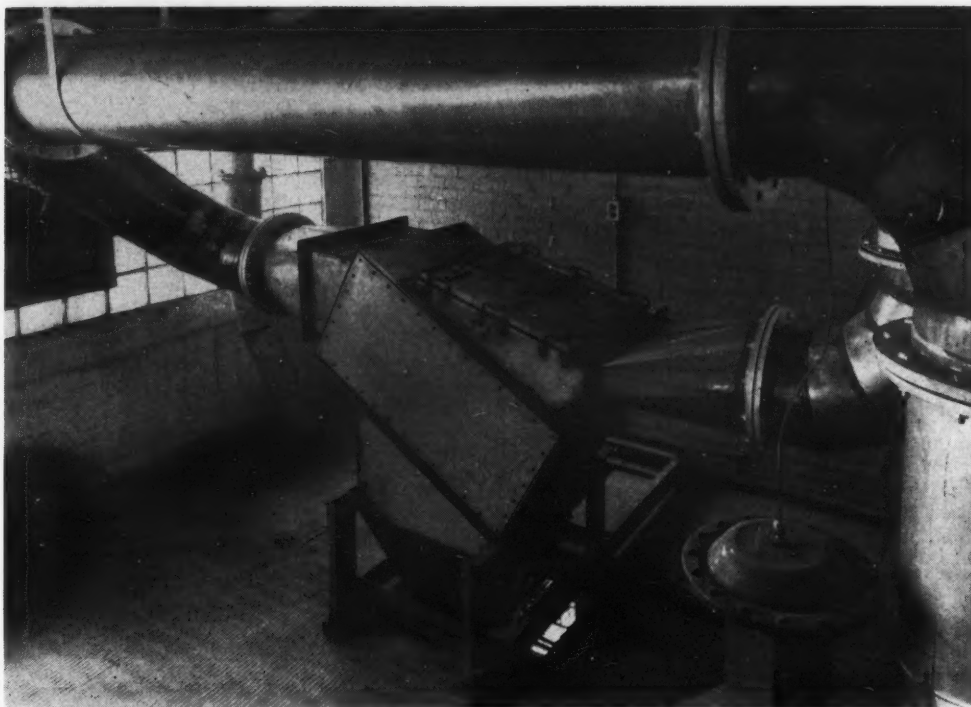
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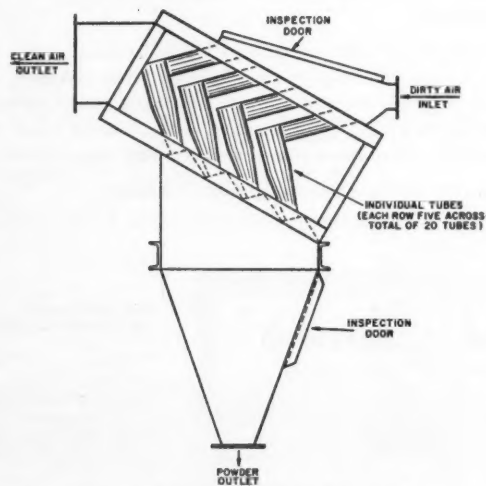
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Product less than five microns in size separates from air in centrifugal collector



Buffalo Electrochemical's Dustex collector is seen in the center of this picture. Dirty air inlet is at right, clean air outlet at left (compare with accompanying drawing)

**Buffalo Electrochemical's multi-tube unit cuts dust load
from 850 to 1.7 grains per 1000 cubic feet**



Simplified sketch of multi-tube collector

Problem: Buffalo Electrochemical Company, Buffalo, N. Y., was losing as much as 2% of a crystalline compound from the cyclone collector on their flash drying system. To add to the difficulty, this lost hygroscopic salt would drift over and short out electrical contactors on the company's incoming power station when wind conditions were right.

First move was to install a water scrubber after the cyclone collector. Although this trapped the material escaping the cyclone, such an operation created the extra expense of adding water to an already dry product and then taking that water out again.

Solution: Based largely on the results obtained in a simple, on-the-spot collection-efficiency test, Buffalo Electrochemical put in a multiple-tube Dustex collector to catch the exhaust from the original cyclone collector. The unit is made of stainless steel and has a total of 20 tubes. Provision has been made to make it easy to blank off

tubes when less air volume is handled . . . so that pressure drop across operating tubes can be maintained. Temperature and rate of flow of air, as well as rate of feed of wet salt to the drying system, are automatically controlled.

For the field test mentioned above, a single tube was connected into the cyclone exhaust line. Flow rates and pressure drops were measured during operation, and samples were taken and weighed to determine collection efficiency. Performance of the commercial installation has been just as predicted from the test.

Results: Exhaust from the Dustex is practically

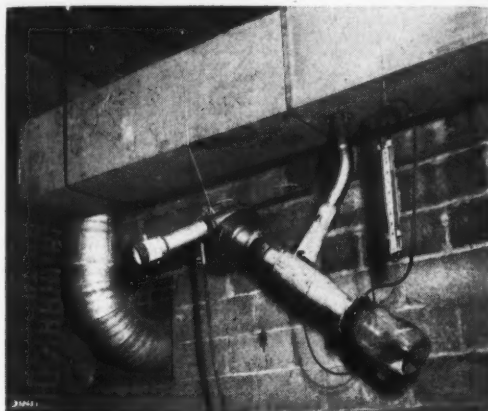
Particle Size Analysis of Dust from Dustex Collector

Micron Range	% by Weight
2.16-2.51	11.2
2.80-3.15	21.2
3.90-4.25	49.4
4.50-4.85	17.6
10-30	0.1

Note: These figures were obtained with aid of a Bahco classifier.

dust-free — it contains less than 1.7 grains/1000 grains/1000 cfm. Flow through the system is 1600 to 2000 cfm.

The accompanying table shows a particle size analysis of dust taken from the Dustex. Note that over 99% is under five microns in size . . . a rather surprising performance for a centrifugal type of collector.



Here's how single-tube test unit is connected into duct to pre-check performance of a collector. That's a blower at top of tube

No trouble with shorting out of electrical equipment in the incoming power station has occurred since the Dustex was installed late in 1952. And another unforeseen advantage may develop: the collected fines appear to have properties which may open additional markets for the product.

(Dustex collector is made by Dustex Corp., Dept. CP, 1758 Walden Ave., P.O. Box 2520, Buffalo 25, N. Y. . . . or for more information check CP 6163 on handy form, pages 2 and 3.)

Use of peroxygen compounds in treating metals

Methods of treating metal surfaces with peroxygen compounds are described in supplementary bulletin to original material (Bul 39) published on the same subject a year ago. Types of surface treatments discussed include bright dips, cleaning solutions, passivation, and inhibitors. Metals involved in report are: steel, aluminum, brass, silver, and stainless steel.

New developments using hydrogen peroxide, compounds forming hydrogen peroxide in solution, persulfates, and peracids are covered. Details on their use, solution formulas and examples are cited.

Bul 51 is issued by Buffalo Electro-Chemical Co., Inc., Dept. CP, Station B, Buffalo 7, New York. When inquiring specify CP 6164 on handy form, pages 2 and 3.



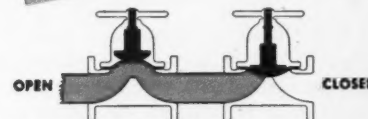
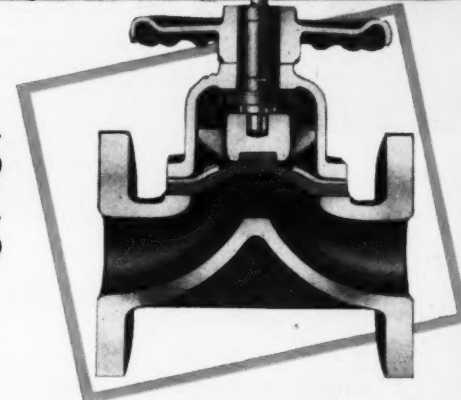
GRINNELL-SAUNDERS DIAPHRAGM VALVES

Commercial aluminum sulphate can be everlastingly troublesome, as anyone knows who has ever had to work with it. So, comparing notes with a company that handles this chemical every day of its business life may be helpful.

Northern Chemical Industries, Searsport, Me., is an important manufacturer of "paper makers alum". Northern Chemical Industries relies heavily on Grinnell-Saunders Diaphragm Valves. They have found that the wide range of body, lining and diaphragm materials available with Grinnell-Saunders valves offers flexibility in handling a wide variety of corrosive fluids.

The basic design of the valve is an advantage. Working parts are completely isolated from the fluid stream which, in the case of corrosive acids, means longer valve life. Also, there is the matter of economy. With Grinnell-Saunders Diaphragm Valves, it is usually possible to go to less expensive body materials, to which special body linings can be added. Replacement and maintenance expenses, moreover, are greatly reduced.

Originally designed and ideally suited for air and water service, Grinnell-Saunders Diaphragm Valves also are recommended for almost every regular or special service. This is backed up by the excellent performance records achieved by valves now in use.



Features of Grinnell-Saunders Diaphragm Valve:

- Diaphragm absolutely isolates working parts from fluid
- Diaphragm lifts high for streamline flow in either direction
- Diaphragm presses tight for positive closure
- Body, lining and diaphragm materials to suit service
- Simple maintenance — diaphragm easily replaced without removing valve from line

GRINNELL
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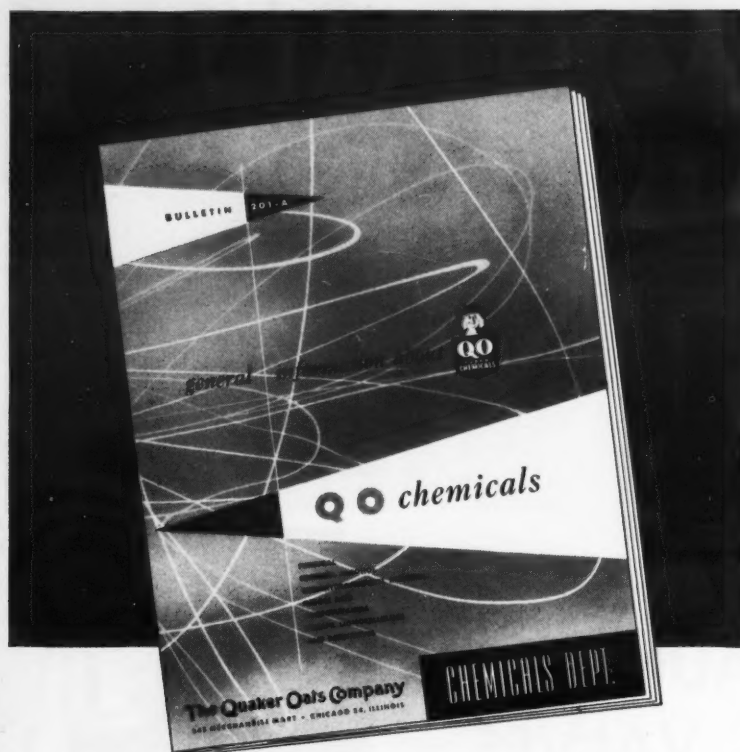
Grinnell Company, Inc., Providence, Rhode Island

Coast-to-Coast Network of Branch Warehouses and Distributors

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When inquiring check CP 6165 on handy form, pgs. 2-3

Write for your copy!



NEW Quaker Oats' Bulletin 201-A

General Information about QO Chemicals

This bulletin—just published—is about furfural, its derivatives, and associated products, and includes practical information on commercial handling, physical data, chemical reactions and established uses.

The QO furfural family of commercial and semi-commercial products, now available, consists of furfural, furfuryl alcohol, tetrahydrofurfuryl alcohol, furoic acid, hydrofurfamide, and Furafil®.

In addition to the products mentioned above, this bulletin discusses other furfural-derived chemicals available in commercial lots.

The Quaker Oats Company

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Room 4365, P. O. Box 4376, Portland 8, Oregon

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201-A

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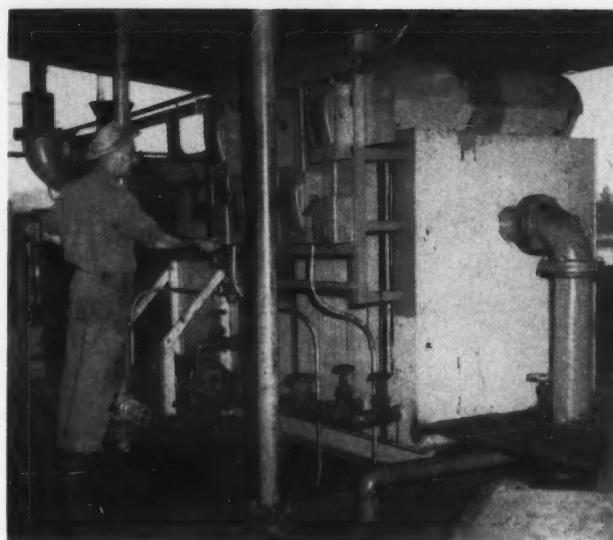
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When inquiring check CP 6166 on handy form, pgs. 2-3

*new solutions
of processing problems*



Engineer at control panel of air-induced flotation unit for removing oils from waste waters at Edgewater, New Jersey, plant of Spencer Kellogg & Sons, Inc.

Problem:

**Gravity separation of oils
from waste waters**

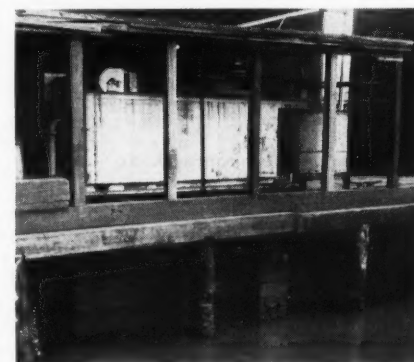
Solution:

Air-induced flotation

**Added bonus now are the solids
being removed in processing of
vegetable oils not formerly
removed by underflow baffle
boxes**

Problem: Processing of vegetable oils (linseed, castor, soya, cottonseed, and coconut) at the Edgewater, New Jersey, plant of Spencer Kellogg & Sons, Inc., involves disposal of waste waters from all processes into the Hudson River. Not only do the waters contain percentages of vegetable oils, but some mineral oil seepage as well. Practice had been to separate these oils from water by means of underflow baffle boxes.

Mere gravity separation alone left appreciable quantities of retained oils in the underflow waters which were finally discharged to the Hudson. At the point of discharge there was always an oil slick on the river waters. Spencer Kellogg's keen sense of public responsibility to remain

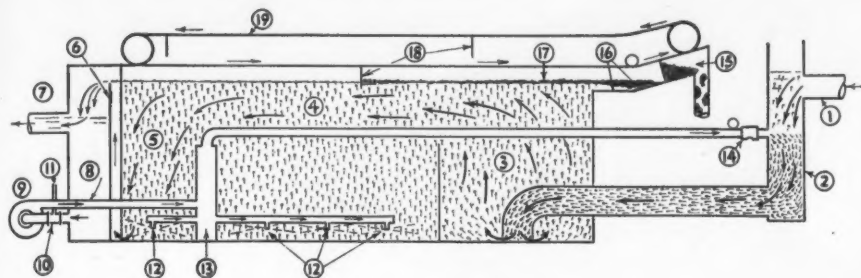


Below present installation of flotation unit are underflow baffle boxes, formerly the only means for separating oils from waste waters

well within the tolerable waste disposal limits led them to investigate more effective means for oil separation.

Solution: Realizing that some sort of an accelerated separation of flotation

(Continued on page 14)



Schematic Flow Diagram Gibbs Flotation Unit

1 Raw influent — Inlet flow to the unit can be by gravity or it can be pumped.

2 Inlet riser — provides for the introduction of air bubbles into the inlet flow. It is also a relief for any agglomerated air to the atmosphere. A coagulating chemical could be added here to provide initial floc formation on tiny air bubble nuclei.

3 Parallel flow zone — Rising air bubbles move up at a slightly greater rate than the rate of maximum flow through the unit. As fast as floc is formed it is moved rapidly to the liquid surface where it concentrates to a floating sludge. Majority of flotation removal is accomplished at the liquid surface over this zone.

4 Lateral flow zone — Volumes of tiny air bubbles move upward throughout the area at approximate right angles to the flow through unit. Slower forming floc is moved to liquid surface over this zone. Nearly all flotation removal has been achieved by the time flow leaves this zone. Air bubbles are discharged through back pressure distributors located below zone.

5 Counter flow zone — Here, tiny air bubbles move upward, counter current to flow in unit, and strip remaining floc particles in the final flotation clarification. Air bubbles are discharged through additional back pressure distributors located near bottom of zone.

6 Discharge weir — Flow discharges over a rectangular weir into clarified water zone. Operating water level is set by weir elevation. Design permits unit to continue in operation even when influent flow drops to zero. Air induction recirculation is independent of flow in unit. Weir wall, and underflow baffle ahead of it, traps entire liquid volume of unit, preventing any short circuiting into clarified water zone.

7 Clarified effluent — Discharge is usually suitable for disposal or reuse. Water supply clarification, or special waste problems, may require secondary treatment.

8 Clarified water zone — This zone supplies the recirculation pump with a constant head flooded suction of clarified water. Variations

in flow rate of unit have no effect on air induction recirculation.

9 Recirculating pump — About 40% of unit's flow is recirculated to produce and distribute volumes of infinitesimal air bubbles to influent and throughout liquid sub surface.

10 Air induction assembly — Air from atmosphere is diffused into pump suction flow of recirculated clarified water.

11 Air intake — Air flow is usually measured by a rotameter or other volumetric indicator. Other gases (oxygen, nitrogen, carbon dioxide, etc) can be applied in place of air.

12 Back pressure distributors — Design of distributor maintains a constant back pressure while discharging a controlled quantity of air-water mixture into unit's head without disturbing near-motionless state. Dissolved air is released on the pressure drop, charging unit with small air bubbles. Distributors are located below lateral flow zone (4) and in lower section of the counter flow zone (5), thus supplementing the bubbles to influent flow.

13 Distributing tank — Recirculation pump discharges air-water mixture under pressure. Tank then separates any agglomerated air bubbles, discharging only bubbles of optimum size from distributors.

14 Air application to inlet flow — Air-water mixture from distributing tank (13) is discharged, along with any agglomerated air, into inlet riser. A simple manual diaphragm valve is used to control back pressure of recirculation system. Accurate and dependable control of quantity and quality of air bubble production is thus obtained.

15-19 Sludge removal system — Floated sludge (17) on liquid surface is moved counter flow to inlet end of unit by sludge blades (18). Sludge deck and ramp (16) collect sludge as it is pushed forward by blade. When blade reaches leading edge of deck, sludge is trapped for positive removal. Blade continues its travel, moving sludge across deck and up ramp, discharging to sludge hopper (15). Blades are pivoted on a roller chain (19).

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When inquiring check CP 6167 on handy form, pgs. 2-3

NEW SOLUTIONS

Service life of pump rods increased over 3000% by metallizing . . .

original cold-drawn steel rods lasted only 48 hours

Problem: A large eastern oil company was having considerable trouble with pump rods in a 16 x 7 x 14" steam pump. Unit was being used for handling crude oil "bottoms," the non-volatile matter remaining after vaporization of crude oil. Operating conditions for the rods are severe, the bottoms containing grit, sand, dirt, and other foreign matter.

Original rods were made of cold-drawn steel and lasted only 48 hours. A hardened steel rod was tried, which did little better.

Solution: The company tried a metallized stainless rod and found that it lasted four weeks in 24-hour-a-day service. Furthermore, the shaft could be re-metallized three times before it had to be scrapped, which meant a total life of twelve weeks per metallized shaft.

Results: Metallizing increased service life of pump rods over 3000%. Just recently the company metallized a rod with a molybdenum coating, and indications are that it will give even better performance.

(Metallizing service is offered by Metallizing Engineering Company, Dept. CP, 38-14 30th St., Long Island City 1, N. Y. . . . or for more information check CP 6168 on handy form located between pages 2 and 3.)

How to weld level gage right into tank

Illustrated data sheet shows and tells how welding pad gages may be attached to a tank or other vessel. Gages are used to show level of liquid within the tank, still, etc. They become an integral part of the unit.

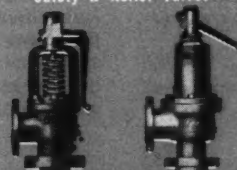
"Welding Pad Gages" is issued by Jerguson Gage & Valve Co., Dept. CP, 80 Fellsway, Somerville 45, Mass. When inquiring specify CP 6169 on handy form, pages 2 and 3.

Another Milestone... the ne



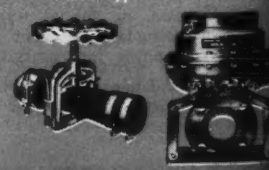
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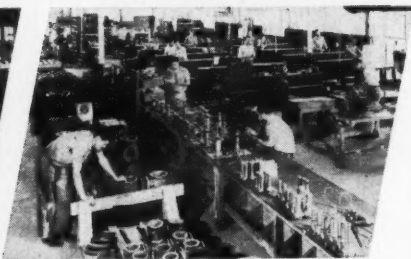
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This plant, on a 4 acre tract, is more than an expansion, it is in fact a living thing . . . visual proof that growth in the American way is the simple result of straightforward, sincere effort in giving appreciative customers their money's worth. In this air-conditioned plant, equipped with the very finest of automatic machinery, we now feel that we have established another milestone; yes, a foundation stone from which our next decade of growth should stem.

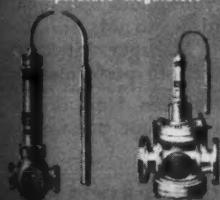
Thanks to you, our customers and friends. Thanks to you, our staff, who have truly made the term man-power vibrant.

We shall always keep our operations simple and direct. This effort and thinking has been, and always will be, well rewarded.

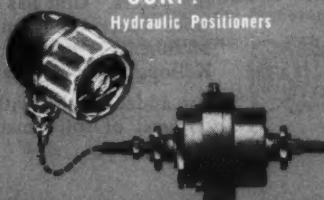
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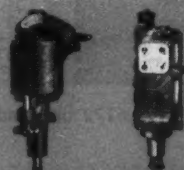
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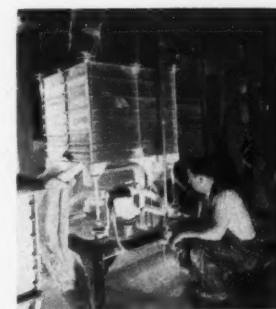
NEW SOLUTIONS

**Save 108 sq ft of floor
when sifter replaces
starch reels . . .**

power needs are much less,
maintenance costs fall

Problem: Four reels, occupying 117 sq ft of floor space, were needed to rebolt, or resift, 9600 lb/hr of laundry starch at Faultless Starch Co., Kansas City, Mo. Plant engineer felt space requirements were too high, that the 7½ hp needed to operate the reels was excessive, and that maintenance costs were too high.

Solution: Company replaced reels with a Circle gyratory sifter having six sieves — three clothed with 120-mesh Duraloy wire, and three with 145-mesh Duraloy wire. Sifter is easily grounded (imperative in starch sifting) by connecting wires from its metal frame to steel floor base.



Six-sieve sifter rebolting
laundry starch

Results: Sifter occupies only nine sq ft of floor space and requires only one hp. Maintenance is low, consisting essentially of lubricating three bearings about once a week.

Company is putting in another sifter to replace six reels in a similar application.

(Circle sifters are made by Allis-Chalmers Manufacturing Company, Dept. CP, Milwaukee 1, Wis. . . . or for more information check CP 6170 on handy form, pages 2 and 3.)

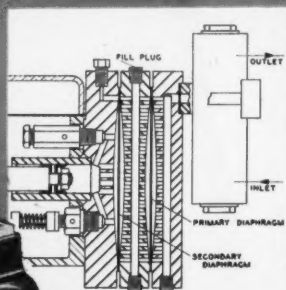
For more information on product at left, specify CP 6171 . . . see information request blank between pages 2 - 3.

YOU CAN PUMP

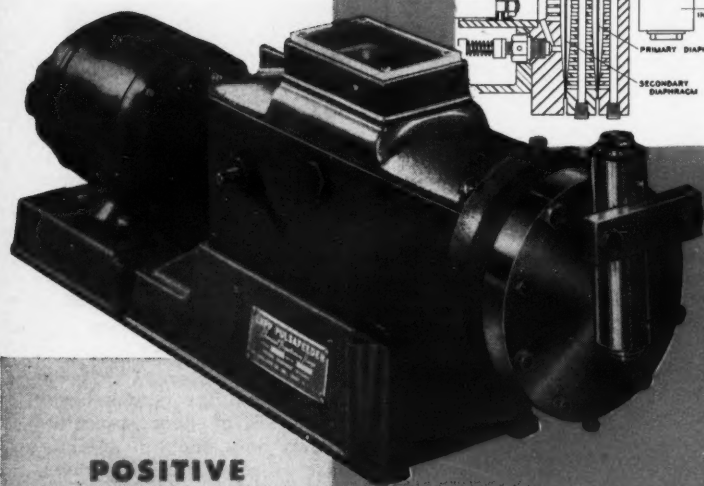
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This is one of several "special design" models of Lapp Pulsafeeder, specifically engineered to the requirements of controlled-volume pumping of "hard-to-handle" chemicals. It is of double-diaphragm construction which provides certain protection in the pumping of anhydrous liquid chlorine, anhydrous hydrogen fluoride, high concentration hydrogen peroxide, fluorine gas or other chemicals which are reactive in contact with petroleum oils. A primary diaphragm isolates chemical being pumped from an intermediate chamber containing a liquid inert to the chemical, which is in turn isolated from hydraulic oil by a second diaphragm. Protection of process liquor from hydraulic oil and atmosphere is provided, even in the case of failure of diaphragm from corrosion fatigue.



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Lapp Pulsafeeder is the combination piston-diaphragm pump for controlled-volume pumping of fluids. Reciprocating piston action provides positive displacement. But the piston pumps only an hydraulic medium, working against a diaphragm. A floating, balanced partition, the diaphragm isolates chemical being pumped from working pump parts—eliminates need for stuffing box or running seal. Pumping speed is constant; variable flow results from variation in piston-stroke length—controlled by manual hand-wheel, or, in Auto-Pneumatic models, by instrument air pressure responding to any instrument-measurable processing variable.

WRITE FOR BULLETIN 300 with typical applications, flow charts, description and specifications of models of various capacities and constructions. Inquiry Data Sheet included from which we can make specific engineering recommendation for your processing requirement. Write Lapp Insulator Co., Inc., Process Equipment Division, 104 Wilson Street, Le Roy, New York.

When inquiring check CP 6172 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from page 10)

process was needed, careful consideration was given to the Gibbs Flotation Unit which makes use of air-induced flotation. From all theoretical and practical standpoints, this unit appeared to be the best solution to the problem. Unit was subsequently installed.

Unit is in the form of a rectangular vessel so designed that the flows through it are maintained in a near-motionless state and volumes of tiny air bubbles are continuously applied to the unit influent and throughout the main body of the flotation zone. A portion of the clarified water is recirculated for air induction by the atmosphere (no air compressor is required), and for the controlled distribution of the air-water intake. Skimming blades provide positive removal of oils from the surface.

In order to obtain a better understanding of the actual operation of the unit, function will be described step-by-step with the aid of the accompanying outline and schematic diagram.

Flotation unit installed at Spencer Kellogg & Sons has a capacity for handling 200 gal/min of raw water, although it is operated merely at half capacity at present. Reason for over capacity is so that all waste waters in the foreseeable future can be accommodated.

Actually, the Flotation Unit is connected to the previously used underflow baffle boxes, but not because the baffle boxes are needed. It was merely more convenient to do this than to arrange for new influent and effluent lines.

Sludge (oil and some solid matter) removed by the flotation unit is passed to a holding tank (see illustration) from where it is sent by a steam-traced line to the boiler house for burning.

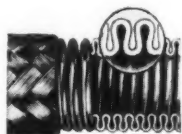


This tank holds sludge oils removed from waste waters until they are sent to boiler house for burning

Results: Effluent waters from the Flotation Unit are crystal clear. They are being discharged to the Hudson River but there is no trace of oil slick on the waters. Unit has been in continuous operation since May, 1953, and according to Mr. G. E. McElheny, Assistant Works Manager, Spencer Kellogg & Sons is satisfied with its performance. An added bonus with the Flotation Unit is the removal of solid matter that was not previously

FLEXONICS

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for every flexible
metal hose requirement**



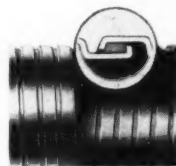
CMH corrugated hose is available with metal braid covering or unbraided in steel, bronze or stainless steel. Used where great flexibility is required at high temperatures and high pressures. Sizes range from $\frac{3}{4}$ " I.D. to 24" I.D. Depending on size, type and material, it will handle burst pressures to 12,000 psi, temperatures to 1200° F.



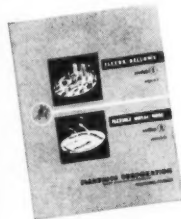
CMH interlocked hose is available in various types, packed and unpacked, in steel, stainless steel, bronze, aluminum, brass and other metals. It is used for steam, exhaust, tar and asphalt, etc. Sizes $\frac{1}{2}$ " to 12", I.D. Depending on size, type and material, it may be used for working pressures to 750 psi (constant), temperatures to 600° F.



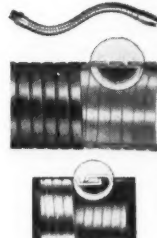
CMH double groove (ball bearing design) hose is available in bronze, steel or stainless steel with asbestos packing and with or without metal braid covering. Widely used for non-searching liquids and gases at low to moderate pressures and temperatures. Sizes range from $\frac{1}{2}$ " to 1 $\frac{1}{4}$ ", I.D.



CMH square locked hose is available unpacked or with a choice of several types of packing in steel, bronze, brass, aluminum, stainless steel, etc. It is used as conduit, cable armor, nozzles and many similar applications. Sizes range from $\frac{3}{4}$ " to 1", I.D. Normally used only at very low pressures.



The Flexonics Hose Design Guide gives specifications and application data on all types of CMH Flexible Metal Hose and special assemblies as well as additional data on other Flexonics products for the original equipment market. Write for your copy or see the Flexonics catalog in Sweet's Product Design File.



Standard assemblies and special purpose flexible metal hose items are manufactured for such services as steam, tar and asphalt, machine tool coolants, machine tool wiring conduit, dry granular products. We will be pleased to send data on any specific requirement.

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Corporation

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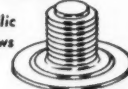


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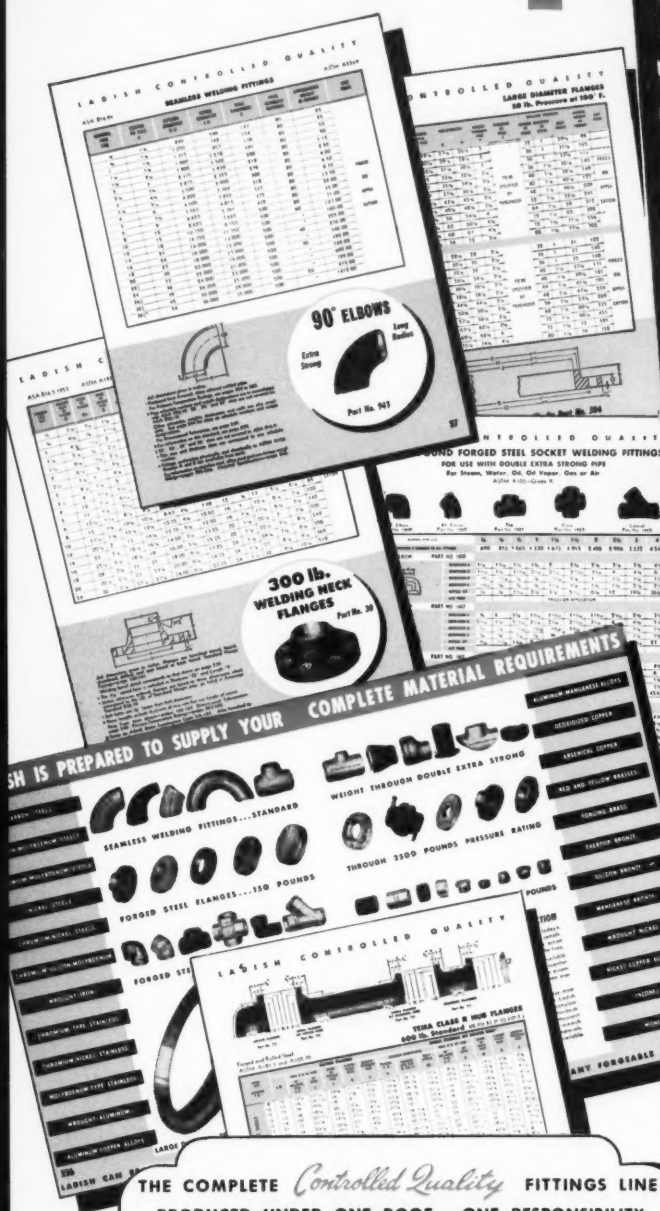


Metallic bellows



When inquiring check CP 6173 on handy form, pgs. 2-3

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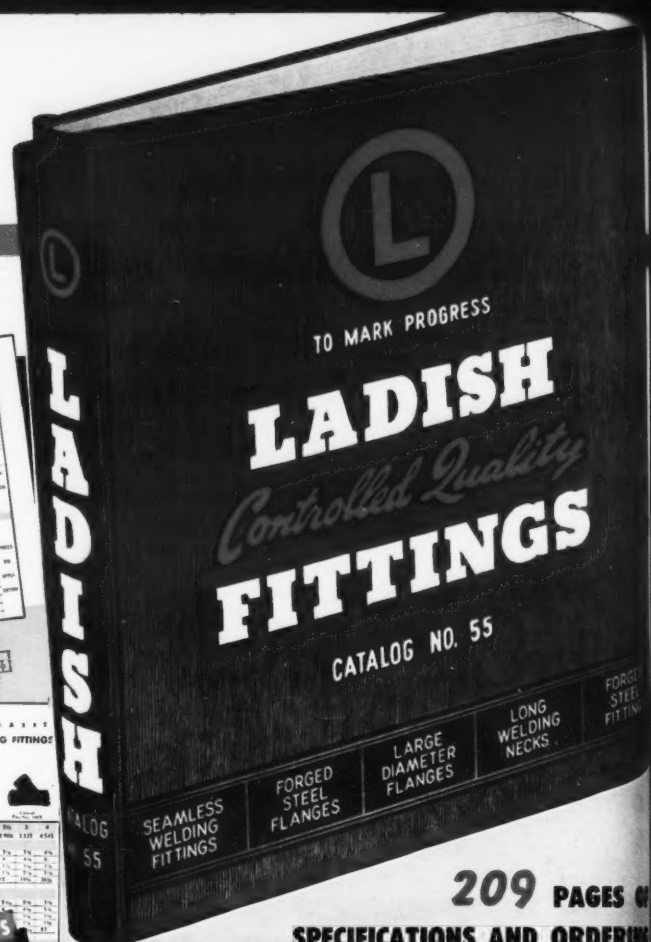


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- 5 PAGES FORGED WELDLESS ROLLED RINGS**
Available in diameters up to 240 inches in a wide variety of forged contours...in weights up to 40,000 pounds.
- 20 PAGES FORGED STEEL FITTINGS**
Screwed and Socket-Welding types in 2000 through 6000-pound pressures, sizes 1/8 through 4 inches.
- 12 PAGES STAINLESS AND ALLOY FITTINGS**
Featuring data on properties of materials and a comprehensive table of piping specifications.



New LADISH Catalog

Provides detailed specifications on complete fittings line plus useful technical data to help solve piping problems

New from cover to cover and thoroughly up to date in latest provisions of codes and standards—this catalog presents a line broad and completely integrated in types, sizes, ratings and materials.

Easy to use... for it is fully tabbed with each section having its own pictorial index and table of contents. Durably bound, this book is a reference work on forged and seamless welding pipe fittings and flanges.

56 PAGES OF TECHNICAL DATA WITH LATEST CODE PROVISIONS SIMPLIFY DESIGN PROBLEMS

For busy engineers here are tabulations of pre-calculated values derived from frequently used design formulae which can be applied directly to the solution of piping problems with a minimum of computations. In addition to data on dimensional tolerances, friction loss and material specifications, this section contains valuable tables on:

ALLOWABLE STRESS AND P/S VALUES

Presented here in an easy to use form, these values help solve problems of wall thickness and working pressures in gas, power, district heating, refrigeration, oil transmission and refinery piping.

MAXIMUM WORKING PRESSURES

Tabulations for 1/2 through 30-inch pipe in a wide selection of wall thicknesses and materials for operating temperatures from 100° F. through 1500° F., in power, district heating, oil transmission, refinery and gas piping systems.

FLANGE PRESSURE-TEMPERATURE RATINGS

Tabulations feature new ratings for a wide range of materials for temperatures from 100° F. through 1500° F.

PROPERTIES OF PIPE

Dimensional characteristics of carbon, alloy and stainless steel pipe in commonly used nominal sizes and wall thicknesses to help solve problems of anchorage, heat loss and insulation.

FLOW THROUGH ORIFICES AND NOZZLES

Discharge through orifices, nozzles and short tubes are tabulated for a wide range of pressures up to 5000 P.S.I. and diameters from 1/4 through 1 1/4 inches.



LADISH CO.
Dept. CP, Cudahy, Wisconsin

Please send me, without cost or obligation, the new 304-page LADISH Fittings Catalog No. 55.

Name

Title

Company

Address

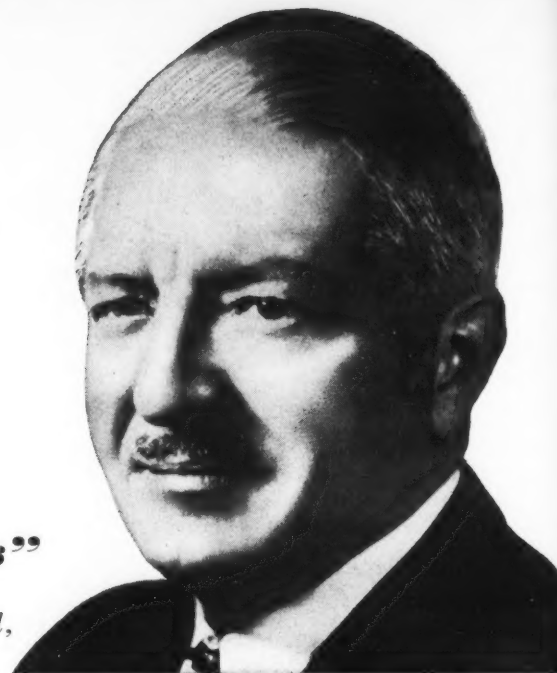
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State

***"If our executives
did not read
BUSINESS
PUBLICATIONS
I'd consider them
unfit for their jobs"***

Col. Willard F. Rockwell,
Chairman of the Board,
Rockwell Manufacturing Company



"We feel the same way about our sales managers," Colonel Rockwell continues. "We expect them to know what is being printed in the business publications and to guide themselves accordingly. Further, we ask our salesmen to keep our home office informed about the comments of our customers on business periodicals."

Like Colonel Rockwell, other business and profes-

sional leaders the country over are reading business publications covering their fields of activity. They are getting from these magazines vital information about new products, new methods, new marketing trends, price and distribution changes through the advertising as well as the editorial pages. The Business Press offers a direct route to anyone who has anything to sell to business and professional men.



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The national association of publishers of 161 technical, professional, scientific, industrial, merchandising and marketing magazines, having a combined circulation of 3,524,478 ... audited by either the Audit Bureau of Circulations or Controlled Circulation Audit, Inc. ... serving and promoting the Business

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For more information on products described in the advertisement of Ladish Co. specify CP 6174 . . . see information request blank between pages 2 - 3.

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FEBRU

NEW SOLUTIONS of processing problems

removed by underflow baffle boxes. This definitely enhances the job Spencer Kellogg & Sons is trying to do to lick the general pollution problem in the heavily industrialized Edgewater area.

(Flotation Unit is a development of F. S. Gibbs, Incorporated, Dept. CP, 2300 Washington Street, Newton Lower Falls 62, Massachusetts . . . or for more information check CP 6175 on handy form, pages 2 and 3.)

Sun's glare filtered out and heat absorbed by blue glass windows . . .

used for outer-walls of vinegar plant for ideal lighting, atmosphere

Vinegar production of H. J. Heinz Co. is now housed in a building especially designed and constructed to withstand adverse action of the product and also provide ideal light and temperature conditions for workers. Operations formerly carried on in three buildings at Pittsburgh are now all under one roof covering 81,000 sq ft.

Most distinctive construction feature is a special blue glass that eliminates glare, absorbs heat and assures a maximum of natural lighting throughout all working areas. Color of the windows and glare reducing design eliminate painting or use of blinds and make-shift shields. Exclusion of solar heat contributes to worker comfort. Tests on $\frac{1}{4}$ " special glass show that about 80% of the solar heat is intercepted by being reflected and absorbed and that but 20% passes through glass without interference.

In reducing glare, the glass changes character of the light and diffuses it with an even spread of adequate illumination. Finish of glass is permanent and is not affected by time or weather and never has to be renewed. Pattern of surface of each window takes advantage of any washing action that may be imparted by flow of rain.

In installation of windows, projected ventilators with rounded corners are utilized. Opening either inward or outward, they may be located anywhere. They are hung on substantial arms and sliding stainless pivot shoes.

Selection for installations may be made from glass with one side surfaced figured, the other fire-finished or with the additional feature of a glare reducing finish. Both types have feature of heat absorption. Exact individual requirements are easily met.

("Coolite" glass for heat reduction and glare absorption is made by Mississippi Glass Co., Dept. CP, 88 Angelica St., St. Louis 7, Mo. . . or for more information reader may simply check CP 6176 on the convenient Reader Service slip located between pages 2 and 3.)

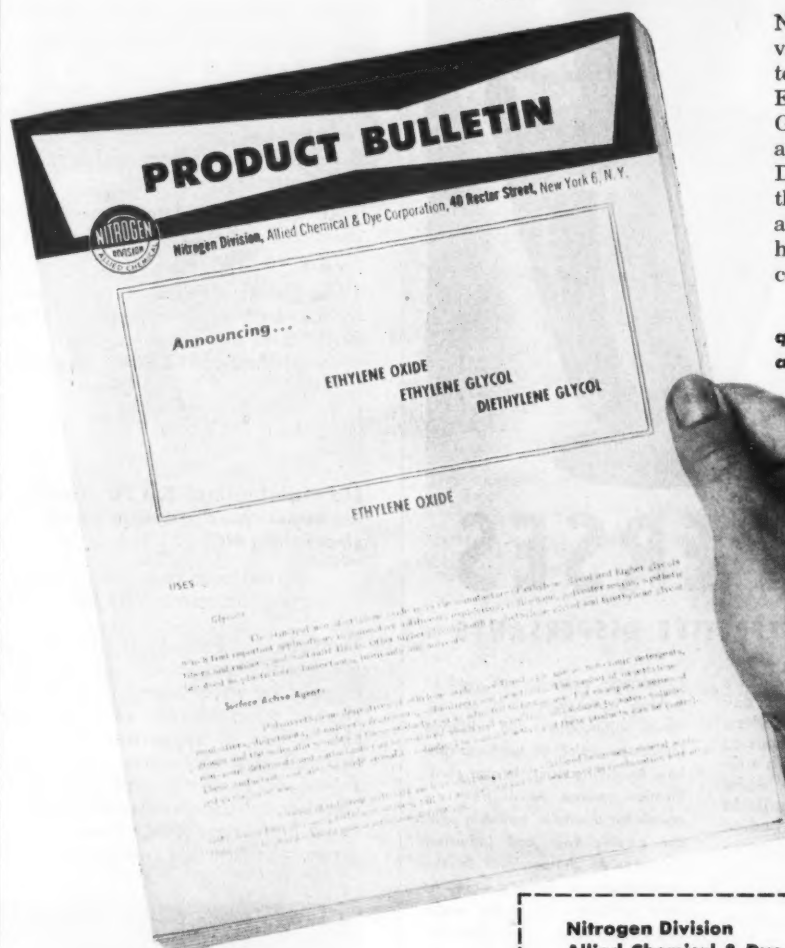
(Aluminum window sections and projected ventilators are made by E. K. Geyser Co., Dept. CP, 915 McArdle Roadway, Pittsburgh 3, Pa. . . or for more information reader may simply check CP 6176A on the convenient Reader Service slip located between pages 2 and 3.)

Ask for This New 24-Page Bulletin on

ETHYLENE OXIDE

ETHYLENE GLYCOL

DIETHYLENE GLYCOL



Nitrogen Division offers you advance information, complete with technical data, on Ethylene Oxide, Ethylene Glycol and Diethylene Glycol. Soon available in tank cars and drums from the new Nitrogen Division plant at Orange, Texas, these organics will be produced by an improved process that assures high standards of quality and exceptional purity.

To expedite handling of your request for the Bulletin, please fill in and mail the coupon.

Nitrogen Division
Allied Chemical & Dye Corporation
40 Rector Street
New York 6, N. Y.

Please send me a copy of your new Bulletin on Ethylene Oxide, Ethylene Glycol and Diethylene Glycol,

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

CP-2



Nitrogen Division
ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET • NEW YORK 6, N. Y.

When inquiring check CP 6177 on handy form, pgs. 2-3



Position assumed by early Egyptian ceramists when they found cracks in their pottery.

Early ceramists didn't have

MARASPERSES

THE low cost, HIGHLY EFFECTIVE DISPERSANTS

If Marasperse had been available in Cleopatra's time the pottery and ceramic ware of that day would be in much better condition now. Modern ceramists know that Marasperse enable them to increase solids contents of clay slips — with uniform distribution throughout the mix — while maintaining a workable viscosity. This results in greater dry and fired strength in ceramic bodies, with fewer rejects due to breakage during processing or to weak spots in finished ware.

Marasperse are versatile dispersants used in a variety of applications:

1. To increase the solids content of slurries without increasing either the viscosity or the volume.
2. To change semi-solids into free-flowing liquids without adding water.
3. To make stable oil-in-water emulsions.

If you have a process, or a use involving one of your products, which requires water suspensions of insoluble materials, investigate the use of Marasperse dispersants.

Marasperse products are used in making water-suspensions of pigments, sulfur, clays, and additives for compounding of synthetic rubber. As deflocculants in size classification systems. As dispersing agents for dyestuffs, wettable powder pesticides, and industrial cleaners. As deflocculants in the manufacture of ceramic ware, as scale inhibitors in boiler water treatment and as conditioners for oil well drilling fluids.

Write for samples and file number 901 for additional information on the Marasperse. Our technical staff will welcome the opportunity to cooperate with you.

MARATHON Corporation
CHEMICAL DIVISION
ROTHSCHILD • WISCONSIN

When inquiring check CP 6178 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Copper refinery switches to kiln for slimes slurry treatment . . .

bisulfate fusion is faster when done in rotary unit instead of older fusion kettles

Rotary kilns have replaced fusion kettles for treatment of slimes slurry in a new western copper refinery. Change was dictated by results of pilot plant tests which indicated that kilns would speed production and last longer than kettles.

In the treatment process, slime undergoes a bisulfate fusion after primary settling, leaching, and dewatering. This is done by mixing slimes with sodium sulfate and sulfuric acid, and then heating by gas burners in the revolving kiln. Selenium is volatilized and recovered by scrubber and Cottrell precipitator.

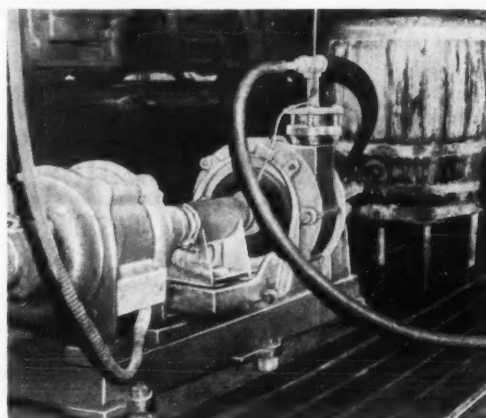
Each of the two kilns (one is a stand-by) is 6' diam and 14' long, and has a 1/2" steel shell and ring gear drive.

(The Standard-Hersey rotary kilns were supplied by Standard Steel Corporation, Dept. CP, 5083 S. Boyle Ave., Los Angeles, Calif. . . or for more information check CP 6179, pages 2 and 3.)

No maintenance for 18 months on impervious graphite pump circulating HCl . . .

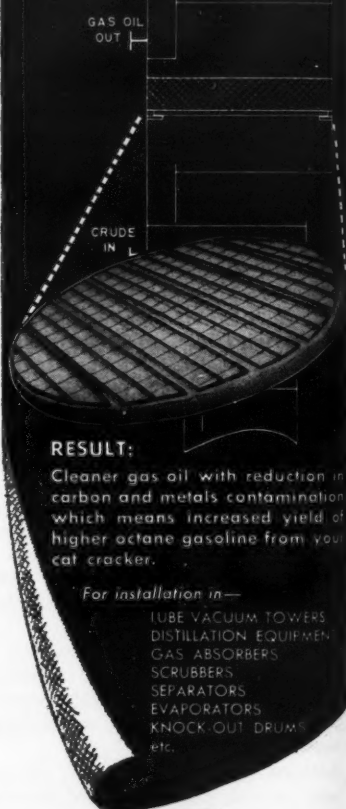
railroad uses unit for recycling acid through steam generator coils for cleaning

Problem: Periodically, steam generators used for heating passenger cars on railroads become clogged by water scale and corrosion and must be cleaned. Procedure is to recycle inhibited hydrochloric acid of approximately 6 to 10% strength through generator coils until scale has been dissolved or loosened, and then flush with water. Usual installation consists of surge tank for acid and a pump connected to inlet and outlet of steam generator to form a continuous circulating system.



Impervious graphite pump circulating hydrochloric acid solution

This YORKMESH DEMISTER means Clean Separation in a Vacuum Tower



RESULT:

Cleaner gas oil with reduction in carbon and metals contamination which means increased yield of higher octane gasoline from your cat cracker.

For installation in—

TUBE VACUUM TOWERS
DISTILLATION EQUIPMENT
GAS ABSORBERS
SCRUBBERS
SEPARATORS
EVAPORATORS
KNOCK-OUT DRUMS
etc.

Send today for Catalog 13



When inquiring check CP 6180 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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FEBRUARY

NEW SOLUTIONS of processing problems

A large eastern railroad experienced operating difficulties and excessive equipment maintenance with a variety of acid resisting pumps used for recycling acid. Pumps that would withstand corrosive action of the acid were needed.

Solution: Railroad installed a Karbate impervious graphite pump in system used for circulating the acid. Impervious graphite pipe and fittings were also used between surge tank and pump, and from pump to coils.

Results: Completely maintenance-free service was obtained during first 18 months' operation of cleaning system. This led railroad to install a similar additional system, and three more are now contemplated. Another railroad, with a more recent installation, has had no maintenance costs in more than a year.

(Karbate impervious graphite pumps are products of National Carbon Co., Div. of Union Carbide and Carbon Corp., Dept CP, 30 E. 42nd St., New York 17, N. Y. . . or for more information check CP 6181 on handy form, pages 2 and 3.)

Regulates amount of silver in photographic film emulsions

Scientists at Armour Research Foundation of Illinois Institute of Technology suggest measuring and controlling amount of silver in photographic film emulsions during manufacturing process by using radioactive silver. Trick is done by making some of the silver atom in emulsion batch radioactive. Instruments can detect and measure radiation from emulsion as film is manufactured. Because only a small number of atoms need be made radioactive (one in 10^{18}) method does not harm film in any way, according to report.

Silver in small sample of emulsion can be measured to 0.1% accuracy in about three minutes.

Report states it is possible to measure amount of silver in sheet film as it comes from production line at rate of one foot per second and that method can give production control to accuracy of 2 to 5% in the emulsion thickness.

(Method was developed by Nuclear Physics Section, Armour Research Foundation of Illinois Institute of Technology, Dept. CP, 35 West 33rd St., Chicago 16, Ill.)

Applications and characteristics of electric circulation heaters

Typical applications and operating characteristics of electric circulation heaters are featured in 8-page bulletin. Photos and drawings show methods of installation and advantages of units.

Bul 701 is available from Edwin L. Wiegand Co., Dept. CP, 7611 Thomas Blvd., Pittsburgh 8, Pa. When inquiring specify CP 6182 on handy form, pages 2 and 3.

TRADE PAPER EDITION
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JET APPARATUS • HEAT TRANSFER EQUIPMENT • STRAINERS • CONDENSERS AND VACUUM PUMPS • OIL BURNING EQUIPMENT • ROTAMETERS • FLOW INDICATORS • RADIAFIN TUBES • VALVES • SPRAY NOZZLES AND ATOMIZERS • GEAR PUMPS • DESUPERHEATERS

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THIS NEW BULLETIN ON SK GEAR PUMPS USES CUT-AWAY DRAWINGS, EASY-TO-READ TABLES, INSTALLATION PHOTOS, CRISP TEXT, TO HELP YOU ANALYZE ALL AVAILABLE TYPES IN TERMS OF YOUR REQUIREMENTS

While preparing this bulletin, we at SK checked with numerous users of SK Gear Pumps to obtain factual operating data.

A particularly pertinent interview was one we had with a company president whose comment offers a good clue to the way these pumps are engineered and built. He told us—

"I have more orders for my equipment than we can take care of right now and one of the reasons is because our machines stand up exceptionally well under some of the toughest conditions you can find in the industry. We use SK Gear Pumps as original equipment on our machinery and I'm glad to be able to tell you that they are a major contributing factor to the efficiency and long-lasting characteristics of our machines."

SK Gear Pumps are well made. And, they are versatile for they can be constructed to handle materials ranging in viscosity from 30 to 10,000,000 S. S. U. Further, depending upon the material handled, capacities can range from 1 gph to 1000 gpm and pressures to 3500 psi.

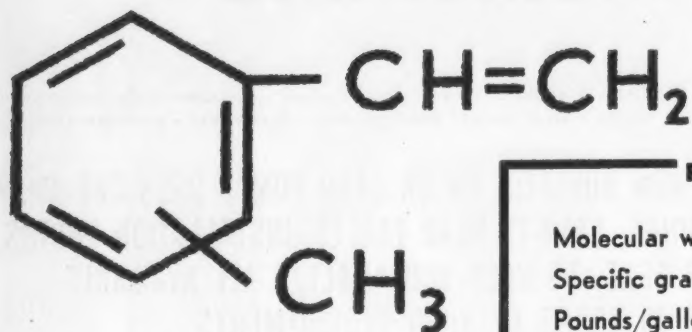
Possibly you are familiar with the reputation these pumps have earned in the power field. But, do you know that hundreds of them are being used in the petrochemical industry, the food industry, in textiles, in the chemical process and other industries for pumping materials such as grape juice, tar, catsup, and the others listed in the box below.

In Bulletin 17-A, we have included material which will help to acquaint you with the types and sizes available, their characteristics and uses. If you can use a copy, drop us a line at the address below. We will send it immediately.

Here are some of the many materials now being handled by SK Gear Pumps:

Alcohol	Glycerol Water Mixture	Shortening
Asphalt	Gum Caustic Mixture	Solvents
Benzine	Heated Oils	Soap Solutions
Black Strap Molasses	Hydraulic Oil	Soup
Catsup	Kerosene	Syrup
Caustic Soda Solution	Linseed Oil	Tar Oil
Cellulose	Lubricating Oil, all grades	Textile Oils and Compounds
Coal Tar	Molasses	Tomato Juice
Coolants	Mucilage	Varnishes
Cotton Seed Oil	Paint	Vegetable Oils
Dopes (with viscosities to 10 million S.S.U.)	Propane and Wax Slurry	Vegetable Juices
Finished Resin	Quenching Oils	Wax
Fuel Oils, all grades	Rayon Solution	Wood Tar
Glue	Roast Tars	Wool Grease

When inquiring check CP 6183 on handy form, pgs. 2-3



PROPERTIES

Molecular weight	118
Specific gravity at 25/25°C.	0.890
Pounds/gallon at 25°C.	7.4
Refractive index at 35°C.	1.5342
Boiling point at 760mm, °C.	170-171
Flash point, °C.	60
Freezing point, °C.	minus 82.5
Viscosity at 25°C., cps.	0.770

VINYLTOLUENE —reacts with all commercially important drying oils

Forms clear, useful vehicles, having high solids content, low viscosity, and non-penetrating characteristics

Uses: The monomer is chemically closely related to styrene and can be used to replace it in many reactions. Suggested applications include paints, potting resins, textile coatings, varnishes, printing inks, fabric impregnants, and other copolymer products.

Features: Vinyltoluene is reported to react easily with all commercially important drying oils. Copolymers with drying oils have high degree of solubility in bland solvents.

Description: Product is approximately 99% pure and consists of two isomers having the methyl group in the position meta or para to the vinyl group. In production, toluene is used as raw material. Three isomers are produced in the

alkylation step. For process reasons, orthoethyltoluene is separated from the meta and para ethyltoluene prior to dehydrogenation.

Vinyltoluene copolymerizes with linseed, soya, dehydrated castor, safflower, fish, cottonseed, and tall oils (including tall oil esters). Boiling point of 170°C permits use of higher reaction temperatures than normally used in copolymerization. Result is lower reaction time and improved clarity of copolymers. When any of these oils is used to modify an alkyd resin, it copolymerizes with the oil-modified resin. It can be reacted with oils or alkyds throughout a wide range of proportions. Most useful range is from 30 to 60% monomer. Vehicles prepared from the monomer are reported to have high solids content and low viscosity with non-penetrating characteristics.

A study was made of the compatibility and viscosity characteristics of vinyltoluene-drying oil interpolymers when modified with commercial divinylbenzene. Interpolymers were prepared using alkali refined linseed oil, alkali refined soybean oil, and an ester of tall oil combined with vinyltoluene plus divinylbenzene modifications. It was found that the amount of divinylbenzene

required in the compositions to give increased viscosity depends upon the oil length of the interpolymers.

In short oil interpolymers containing 40% oil, 6-7% commercial divinylbenzene can be incorporated before gellation occurs. In long oil interpolymers containing 60% oil, 11-13% divinylbenzene can be incorporated. Interpolymers prepared with alkali refined soybean oil have higher solution viscosities than those prepared with alkali refined linseed oil with about the same divinylbenzene replacement. Effect of divinylbenzene upon viscosity change was more pronounced in the tall oil ester than in either linseed or soybean interpolymers. Results of study are shown on accompanying charts.

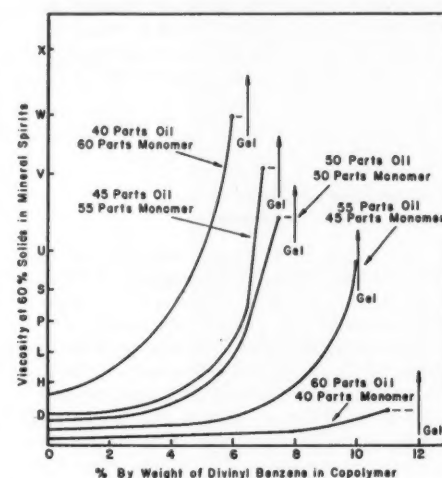


Fig 1 Effect of divinylbenzene on viscosity of vinyltoluene/linseed oil copolymers

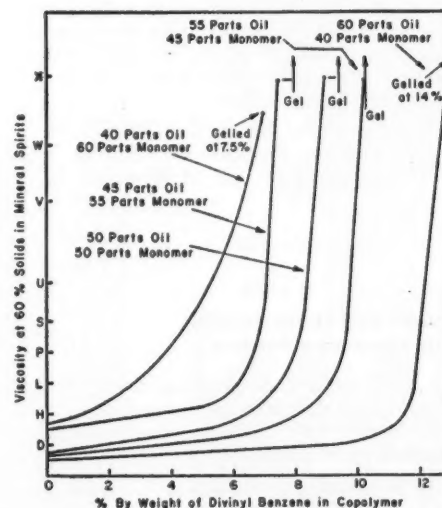


Fig 2 Effect of divinylbenzene on viscosity of vinyltoluene/soybean oil copolymers

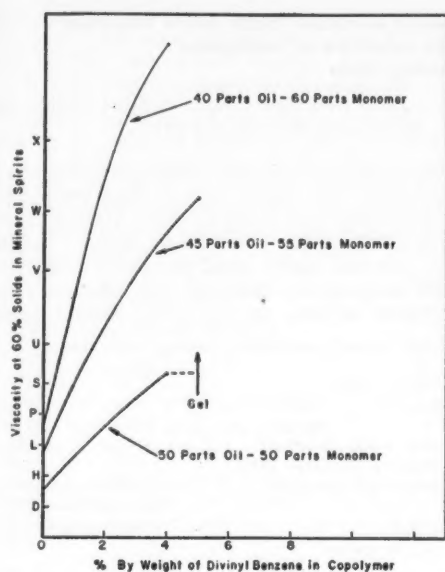


Fig 3 Effect of divinylbenzene on viscosity of vinyltoluene/tall oil ester copolymers

Properties exhibited by vinyltoluenated drying oils modified with divinylbenzene include: greater viscosity, excellent color, improved solvent and alkali resistance, good solubility in low solvency aliphatic hydrocarbons, excellent drier stability, faster dry hard films, greater Sward hardness, and good flexibility.

(Vinyltoluene is product of the Dow Chemical Company, Midland, Michigan . . . or for more information check 6184, pages 2 and 3.)

Thermosetting molding material has little after-shrinkage . . .

eliminates problem of dimensional stability in arc-resistant materials

Uses: For molding use in distributor caps, motor control circuits, power transmission circuits, electrical connectors, ignition parts, switch panels, and radio tube bases.

Features: Material has high arc resistance which has been measured at 184 seconds in standard ASTM tests.

Description: Thermosetting molding material combines improved arc resistance and dimensional stability. Problem of after-shrinkage, a serious objection to most arc-resistant materials, is virtually eliminated. Material has unusual moldability, including good transfer molding properties. It has relatively good impact strength and heat resistance.

(Resinox 3700 is produced by Plastics Div. of Monsanto Chemical Co., Dept. CP, Springfield, Mass. . . . or for more information check CP 6185 on handy form, pages 2 and 3.)

TRIETHANOLAMINE from Carbide and Carbon

25 . . . for more than
a quarter of
a century

That's how long CARBIDE has been producing and supplying triethanolamine. Of all the amines produced, this viscous, hygroscopic liquid offers one of the widest ranges of uses for emulsions and other chemical processing fields. So, before you decide on any amine, consider CARBIDE's triethanolamine —available in two grades, "regular" and "98 per cent."

A 44-page booklet "Aliphatic Nitrogen Compounds" gives the latest information on physical properties, specifications, and shipping data for triethanolamine and the other amines available from CARBIDE. For your copy, write to the nearest CARBIDE office. Offices located in 21 principal cities. In Canada: Carbide and Carbon Chemicals, Limited, Toronto.

SOME OF THE TYPICAL USES OF TRIETHANOLAMINE:

Industrial Oil Emulsions

increasing solubility of sulfonated oils
wool lubrication
leather fat-liquoring
other oil emulsions

Soluble Oils

soluble mineral oils
cutting oils
textile machinery lubricants
rayon oils
orchard sprays

Solvent Emulsions

hydrocarbon solvent emulsions
chlorinated solvent emulsions

Industrial Wax Emulsions

dispersion of casein, shellac, dyes, and
rubber latex
shoe polishes and leather dressings
sizing and water-proof coatings

Oil and Wax Polishes

Rubless Floor Polishes

Cosmetic Preparations and Detergents

Neutralize Natural Oils, Clays and Pigments

Photographic Film Developing Baths

Removal of Carbon and Gum Deposits

Corrosion Inhibitor

**CARBIDE
AND CARBON
CHEMICALS**

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street New York 17, N. Y.

When inquiring check CP 6186 on handy form, pgs. 2-3

since 1943

Glycerine is the Vehicle



Over 40,000,000 bottles of water-soluble vitamins A and D, with Glycerine as an important ingredient, have been sold by U. S. Vitamin Corporation since 1943. Vi-Syneral Vitamin Drops, their leading product among these oil-in-water solutions, is fed to infants and young children, often from the first week of life. U.S.P. Glycerine, an ideal vehicle for the vitamins, meets Vi-Syneral's rigid standards of purity and uniformity.

Pharmaceutical companies often select Glycerine as an ingredient in a product because it performs not just one function but two or three.

U.S.P. Glycerine's versatility cannot be matched. Though Glycerine is used primarily as a vehicle in Vi-Syneral Drops, it also acts in this formulation as a solvent, flavor, and preservative.

Other pharmaceutical formulas use Glycerine as an emollient . . . demulcent . . . stabilizer. It is physiologically safe. Glycerine is reported to be an ingredient in over 50% of all liquid medications compounded by the druggist.

Write for the handy, 16-page booklet, "Why Glycerine for Drugs and Cosmetics?" describing Glycerine's properties and applications. Yours for the asking from Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

When inquiring check CP 6187 on handy form, pgs. 2-3

MATERIALS

Baking enamels made more resistant with addition of melamine coating resin . . .

automotive enamels, venetian blind finishes, and refrigerator enamels improved

Intended for use in highest grade baking enamels in conjunction with wide range of alkyd resins, melamine coating resin is said to have following characteristics: superior "flow" and "build," freedom from pits and craters, rapid rate of cure, improved alkyd compatibility, and high resistance to soaps, detergents, solvents, and household staining agents.

Specifications of melamine coating resin are:

Solids content	54-56%
Solvents	butanol 25%
	xylene 20%
Acid Value (solution)	0-0.55
Viscosity (Gardner 1933)	D-F
Solvent tol. (weight)	xylene — complete
	min. spirits — 500%
Clarity	clear to slight haze
Lb per gallon	8.38

(Plaskon 3382 is product of Barrett Div. of Allied Chemical & Dye Corp., Dept. CP, 40 Rector St., New York 6, N. Y. . . or for more information check CP 6188 on handy form, pages 2 and 3.)

Underwater application possible with silicone adhesives . . .

products remain pliable and retain their strength in temp range from -55 to 250°C

Uses: As adhesives on glass cloth and tape for high temperature electric and electronic applications, or on low temperature, weather-resistant wrapping and sealing tapes.

Features: Materials possess good thermal stability and dielectric properties, resist moisture, weathering, and aging.

Description: Pressure sensitive adhesives, XC-269 and XC-271, are 40% solutions of silicone solids in xylene. Actually they are not classified as glues or adhesives because neither material forms a hard or brittle bond. They remain pliable and retain their adhesive strength at temperatures ranging from -55 to over 250°C. Adhesive properties at room temperatures are said to compare favorably with other organic adhesives, while at elevated temperatures they are reported to be even better.

Products give good adhesion to metals, glass, paper, fabrics, and plastics — including polyethylene or polyester films. They adhere well to silicone rubber, silicone-treated paper, Teflon, and silicone-glass laminates or cloth. Reported advantage is they will adhere to most surfaces when applied under water.

Materials are supplied at viscosity suitable for knife coating. For spray or dip coating, they may be thinned with heptane, xylene, toluene, or other aromatic hydrocarbon solvents. Preliminary tests

indicate that solvent solutions with XC-269 have shelf life of at least six months, while those with XC-271 have life of three months. Finished tapes made with adhesives have similar shelf life.

Coatings made with XC-269 can be cured by heating for five minutes at 250°C, while XC-271 coatings take five minutes at 150°C. Lower curing temperatures of XC-271 make it preferable for production of pressure sensitive tapes from less heat-stable backing materials. Other properties of both products are listed in table below.

Viscosity @ 25°C, centipoises	1000-3000
Flash point, °F	60-75
Weight loss, 3 hr @ 250°C, %	8
Sp gr	0.94
Shipping weight, lb/gal	7.5

Maker does not recommend products for applications involving exposure to high concentrations of solvent vapors or oils.

(Silicone adhesives are produced by Dow Corning Corporation, Dept. CP, Midland, Michigan . . . check CP 6189 on handy form, pages 2 and 3.)

Hydrazine used to remove free chlorine from HCl . .

Strong reducing action of hydrazine is used by hydrochloric acid manufacturer to remove free chlorine in making C.P. muriatic acid. In the form of hydrazine hydrate, hydrazine is added to acid in finished product storage tank or tank car in approximately stoichiometric proportion to amount of free chlorine present.

It combines with chlorine to form hydrochloric acid and nitrogen. In operation, chlorine-free acid is produced, and amount of chlorine removed approximates 50 ppm.

It is reported that method will prove economical for removal of considerably higher concentrations of chlorine and also for the purification of aqueous solutions of other halogen acids.

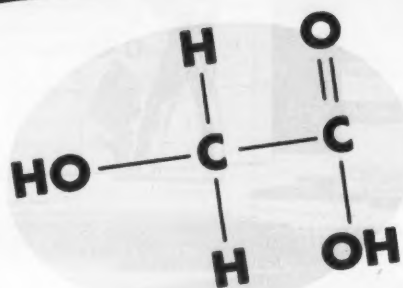
(Hydrazine used in making the muriatic acid was supplied by Mathieson Chemical Corp., Dept. CP, Mathieson Bldg., Baltimore 3, Maryland . . . or check CP 6190, pages 2 and 3.)

Records 75 year growth in 104 page catalog

Illustrated 104-page catalog contains full account of company's history, growth, and numerous products. Photographs of eleven plants in the United States and Argentina, product descriptions, specifications, technical data (including useful tables, graphs, and general information), and packaging and shipping information, round out contents.

Catalog "Chemicals for Industry and Agriculture" is available on letterhead request to Consolidated Chemical Industries Inc., Dept. CP, 630 Fifth Ave., New York 17, N. Y.

AN IDEA-CHEMICAL FROM DU PONT



HYDROXYACETIC ACID (Glycolic Acid)

REACTS WITH:

- Alcohols to form esters
- Acids or anhydrides to form acyloxy derivatives such as acetoxyacetic acid
- Ammonia or amines to form salts or amides
- Itself to form inner esters or glycolides

pH of Aqueous Solutions:

Concentration Wt. %	pH at 25° C
0.5	2.5
1.0	2.33
2.0	2.16
5.0	1.91
10.0	1.73

AVAILABILITY: Du Pont hydroxyacetic acid is shipped from conveniently located stock points in 6,000-gallon tank cars (60,000 lbs., 70% solution) and 10,000-gallon tank cars (100,000 lbs., 70% solution). It is also available in 50-gallon wooden barrels (average net weight 490-500 lbs.).

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CHEMICALS • PLASTICS

E. I. du Pont de Nemours & Co. (Inc.)

Polychemicals Department 582, Wilmington 98, Delaware

Please send me more information on hydroxyacetic acid—specifications, chemical and physical properties, suggested uses, bibliography, etc. I am interested in evaluating hydroxyacetic acid for the following applications:

Name _____ Title _____
Firm _____
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Here is an economical organic acid you should investigate

Du Pont hydroxyacetic acid is a proven organic acid for many industrial applications. Available as a 70% technical solution, hydroxyacetic acid is weaker than the common mineral acids, yet is more economical than most other organic acids. Thus it offers low cost plus safety in critical operations such as pH control and textile dyeing.

Hydroxyacetic acid solutions are miscible in all proportions with water and water-soluble organic solvents such as methanol, ethanol, acetic acid and acetone to insure maximum flexibility in processing operations.

The low volatility and lack of odor of hydroxyacetic acid help provide better working conditions wherever it is used. Among other industrial uses, hydroxyacetic acid has become a valuable aid in the processing of textiles, leather and metals and a useful intermediate in certain chemical reactions.

Why not investigate the use of hydroxyacetic acid in your business? We'll be glad to send more information on this low-cost organic acid—specifications, properties, suggested uses. Just send in the coupon below, or write on your letterhead today.

When inquiring check CP 6191 on handy form, pgs. 2-3



Save time with quick-dissolving HOOKER SODIUM SULFIDES

get clear solutions in 15 minutes

Your production men can work fast with these Hooker sulfides.

The flakes dissolve in 15 minutes, even without stirring—and in cold water. They give a clear solution, free of sediment—ready for immediate use, with no decanting.

Hooker sodium sulfide is a light buff-colored material in flake or solid form. It contains 60 to 62% Na_2S . Flake form is shipped in lacquer-lined steel drums, 90 and 350 lbs. net. Solid form comes in steel drums, 625 lbs. net.

Hooker sodium tetrasulfide is a dark red aqueous solution con-

taining 40% by weight of Na_2S_4 . The solution contains less than 1% sodium thiosulfate, sodium carbonate, and sodium sulfite inclusive. It is shipped in 55-gal. steel drums, 600 lbs. net.

Hooker sodium sulfhydryte, a light lemon-colored solid in flake form, is completely and rapidly soluble in water and alcohol. It is an exceptionally pure material containing 70 to 72% NaSH . It is supplied in lacquer-lined steel drums, 90 and 350 lbs. net.

Before re-ordering your requirements, get the facts on these high-purity sulfides. Just phone

the nearest Hooker office listed below. For technical data, mail the coupon today.

Using sulfur compounds? These are only three of a selection of sulfur compounds available in volume. We've specialized in sulfur-chlorine products for more than a quarter of a century; can help you with your requirements for sulfur chlorides and oxychlorides, and organic sulfur compounds as well. If you need a special sulfur-containing compound in quantity, we may be able to produce it economically for you. To find out quickly, just phone the nearest Hooker office or write us today.

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HOOKER ELECTROCHEMICAL COMPANY

When inquiring check CP 6192 on handy form, pgs. 2-3

HOOKER ELECTROCHEMICAL COMPANY

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- ☐ Sodium Sulfide
☐ Sodium Sulfhydryte
☐ Sodium Tetrasulfide

☐ Bulletin 100 describing
Hooker products and
services

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

MATERIALS

Offering technical grade ethylene diamine...

75-78% active ingredient, boils @ 115-122°C

Uses: As an important chemical intermediate, ethylene diamine is employed in the production of rubber chemicals, synthetic waxes, pharmaceuticals, fungicides, insecticides, and certain synthetic resins which serve as adhesives, protective coatings, molding compounds, and textile finishing agents.

On the basis of its chemical and physical properties, it also finds use as a solvent, stabilizer, and alkalinity control agent.

Because of its dibasic nature, ethylene diamine is used in the manufacture of synthetic resins, formed from its reaction with formaldehyde, polymeric fatty acids, or phenol-formaldehyde systems. It is also used as a catalyst for curing ethoxylene resins and condensing of other polymeric substances.

Description: Technical grade is 75-78% ethylene diamine. The colorless liquid has a flash point about 150°F (open cup), boiling range from 115° to 122°C. The color (APHA) is 25 (maximum); weight per gallon, eight pounds. Care must be taken in handling the liquid to avoid irritation of eyes and skin.

(Ethylene diamine is a product of Hydrocarbon Chemicals Div., Mathieson Chemical Corp., Dept. CP, Baltimore 3, Md. . . or for more information reader may simply check CP 6193 on handy form located between pages 2 and 3.)

Aldehyde content in glucose determined by oxidation with acid chlorite...

method is important for research on mechanisms of cellulose deterioration

Studies, currently being conducted by National Bureau of Standards on degradation of cellulose have suggested that the amount of aldehyde present in cellulose can be determined by oxidation with acid chlorite. Commonly accepted methods employ an alkaline medium, but because some modified celluloses are sensitive to alkalis, results often have been ambiguous. Acid solutions of sodium chlorite, on the other hand, do not attack functional groups in cellulose or sugars, with the exception of the aldehyde group, which is quantitatively oxidized to carboxyl.

A difficulty with the sodium chlorite method was the fact that solutions of chlorite salts are unstable in acid medium. As chlorite reacts rather slowly with aldehyde in hexose sugars, decomposition of chlorite occurs during the reaction. This was overcome in two ways: (1) by use of a calibration curve relating chlorite consumed to aldose oxidized for specific experimental conditions, and (2) by development of an analytical expression from kinetic and stoichiometric considerations. The former is more accurate, but the latter is more flexible, as it applies over a range of experimental

Problem

To produce more ammonia without excessive expansion of existing facilities.



Solution

GIRDLER helped solve this problem by developing two highly active catalysts, G-19 and G-3. Without sacrificing quality or enlarging the gas plant, the use of these two GIRDLER Catalysts on synthesis gas production resulted in:

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Catalysts



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A DIVISION OF
NATIONAL CYLINDER GAS COMPANY
Gas Processes Division
LOUISVILLE 1, KENTUCKY
NEW YORK • TULSA • SAN FRANCISCO

When inquiring check CP 6194 on handy form, pgs. 2-3

MATERIALS

conditions. Either gives experimental values for glucose within a few per cent of theoretical value, accuracy depending upon amount of glucose present.

The kinetics of the oxidation of glucose were studied over ranges of 3.4 to 4.4 pH, 30° to 65°C, 0.005 to 0.15 molar sodium chlorite, and 0.00006 to 0.0016 molar glucose. The reactions were followed by determining the change in chlorite concentration, as shown by iodometric titration and photometric measurement of the soluble yellow gas, chlorine dioxide, formed in the oxidation of aldose by chlorite. Cellobiose, melibiose, maltose, and lactose were all oxidized at about same rate as glucose, but non-reducing sugars and sugar acids were not appreciable oxidized under the conditions of the experiments.

(Information obtained from National Bureau of Standards, U.S. Department of Commerce, Washington 25, D. C.)

Proves useful as supplement to urea, melamine . . .

material exhibits resin forming properties

Uses: Suggested applications include use in resins for adhesives, textile treating, paper treating, molding powders, and coatings. Also useful in dyes, blowing agents, and specialty products.

Features: Material is similar to urea and can be used in applications where urea or melamine is used. It is not intended as a replacement for these products but as supplement to them where its properties prove valuable.

Description: Biuret is a white odorless crystalline solid, mp 192.5-193°C. It is only slightly soluble in cold water, non-hygroscopic, is soluble in alcohol but only slightly soluble in ether. Believed to be relatively non-toxic, non-explosive, and non-flammable. Material is supplied as free flowing powder having bulk density of about 30 lb/cu ft. Samples are available for research purposes only.

(Biuret is product of Product Development Department, Nitrogen Division, Allied Chemical and Dye Corporation, Dept. CP, 40 Rector Street, New York 6, N. Y. . . or for more information check CP 6195 on handy form, pages 2 and 3.)

Looking for a chemical raw material or intermediate? . . .

The alphabetical Product Directory (pages 221 to 224) will help you find it in a hurry. This listing, started by CHEMICAL PROCESSING in 1938, "puts the finger" on all subjects, products, equipment in editorial columns and advertisements of each issue.

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SERVICE**

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coconut oil fatty acids
→ for **PURITY**

Before you order, compare the purity of El Dorado fatty acids with all others.

You'll agree — El Dorado's standards are the highest in the industry.

One **BIG REASON** is that El Dorado has specialized in Coconut Oil Products for a half century.

Delivery? El Dorado maintains stocks in New York, Chicago, San Francisco areas...ready to go when you want service.

For samples and specifications, write Dept. P.

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Capric	92% " "
Lauric	94% " "
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PLANTS: Bayonne, New Jersey
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When inquiring check CP 6196 on handy form, pgs. 2-3

WILLIAMS
announces
new line of
natural iron
oxide pigments

VVF

VVF pigments are produced by our unique grinding process to give a very, very, fine product controlled for top particle size and particle size distribution. VVF pigments will reduce your grinding and dispersing time in paints and allied products as much as 75%. VVF pigments give you brighter mass color, stronger tint, increased hiding power, and

higher gloss than standard grind pigments. VVF pigments now available are—Raw and Burnt Siennas, Raw and Burnt Umbers, Metallic Browns, Red Iron Oxide, and Primer Pigments.

Your Williams representatives will gladly give you complete information on this new pigment group—or mail coupon for illustrated VVF TECH REPORT.

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Please send me VVF TECH REPORT giving physical and chemical specifications and list of suggested applications.

Name _____ Title _____

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C. K. Williams & Co.
Easton, Pa.
East St. Louis, Ill.
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When inquiring check CP 6197 on handy form, pgs. 2-3

Starting point for quality products

Quality products begin with quality ingredients. That's why Nialk

Chemicals are used today in so many exacting applications.

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NIALK TRICHLORethylene: For fast, low-cost degreasing of metal parts, NIALK TRICHLORethylene is enjoying a rapidly growing acceptance. This superior degreasing agent cleans and dries in record time...is nonflammable...can be heated by either gas, steam or electricity...and is completely re-usable after distillation.

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PARADICHLOROBENZENE

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MATERIALS

Nine organic chemicals added to maker's list

Organic chemicals recently added to manufacturer's line, include the following:

N¹, N¹-Diethylsulfanilamide, mp 105-107°C, mw 228.31. Reagent takes advantage of ability of sulfa compounds to act as colorimetric reagents for thyroxine. It provides an assay based on diazotization of the reagent, formation of a strongly colored reaction product with thyroxine, and extraction in N-butanol.

m-Toloxycetic acid, mp 103-104°C, mw 166.17 is reagent for separating thorium from rare earths of monazite sands and from uranium.

p-Amino- α -chloroacetophenone, mp 146°C and mw 169.61.

4-Aminoantipyrine, mp 107-109°C, mw 203.24.

Bicyclohexyl, mp 0-2°C, mw 166.30.

Butyrolactone, bp 90-92°C 17 mm, mw 86.09.

2,4-Dihydroxybenzophenone, mp 143-145°C, mw 214.21.

p-Nitrophenoxycetic acid, mp 185-187°C, mw 197.14.

Sebaconitrile, mp 7-9°C, mw 164.24.

(Products of Distillation Products Industries, Eastman Organic Chemicals Department, Dept CP, Rochester 3, N. Y. . . . or for more information check CP 6198 on handy form, pages 2 and 3.)

Improves color-blending in molding compounds

Easier color blending is reported for granular natural-colored molding compound. High-impact polystyrene material is aimed toward those manufacturers preferring to do own coloring.

(Styron 475 is manufactured by The Dow Chemical Co., Midland, Mich. . . . check 6199 on handy form, pages 2 and 3.)

For more information on product at left, specify CP 6200 . . . see information request blank between pages 2 - 3.

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Uses: tive an rials an pliance

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Flow, wetting properties of resin allow molding with little or no pressure . . .

curing at room or elevated temperatures is possible with suitable catalysts

Uses: For thermosetting products in automotive and aircraft parts industries, building materials and accessories, home furnishings and appliances.

Features: Excellent flow properties and wetting characteristics allow laminating and molding with little or no application of pressure. Curing at room or elevated temperatures possible with choice of catalysts.

Both reinforcing and non-reinforcing fillers may be used. Non-reinforcing fillers may be added in proportions up to 60% by weight, depending upon particle size and wetting power of the filler.

Description: Storage life at room temp is six months or more, if resin is protected from UV. Pot life is several days at room temp for high temp catalyzed resins, seconds to hours with room temp catalysts.

Although cured product is slow burning, additives can make it self-extinguishing. Pigments should be properly dispersed in liquid vehicle before addition.

Polylite resins are supplied having viscosities ranging from 300 to 2700 cps (25°C), and with different degrees of reactivity. The rigid types can be blended with each other, with flexible resins, and with monomeric styrene to alter curing characteristics and product properties.

These thermosetting resins are available in translucent or transparent form. Products have high strength, good electrical properties, and low thermal conductivity.

(Polylite resins are a product of Reichhold Chemicals, Inc., Dept. CP, 630 Fifth Ave., New York 20, N. Y. . . . or check CP 6201 on handy form, pages 2 and 3.)

Outlines features and uses of anionic dispersant

Anionic dispersants, non-hygroscopic free-flowing amorphous powders, are explained in 12-page catalog. Dispersants are used:

- 1.) To prevent or retard settling of finely divided solids in water suspensions.
- 2.) To decrease viscosity of a system while maintaining same solids content.
- 3.) To permit increased concentration of solids in suspension without a consequent rise in viscosity.

Bul 120 is available from Marathon Corp., Chemical Div., Dept. CP, Rothschild, Wis. When inquiring specify CP 6202 on handy form, pages 2 and 3.

Davison Bulletin

KEEP IT DRY!

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You can have dry air in your control instruments or buildings where operations require low humidity. Dynamic adsorption can accomplish this efficiently, economically by forcing air or gas-air mixtures containing moisture through a layer or bed of chemically inert non-deliquescent silica gel. The adsorptive quality of silica gel removes the moisture making dry air available to meet your requirements. Today telephone cable producers, confectionary suppliers, libraries, ship cargo holds, etc., are dependent upon silica gel dry air systems. Many industrial gases such as nitrogen, oxygen, methane, hydrogen, bromine, chlorine, etc. are efficiently dried with silica gel.

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The presence of moisture in a liquid is often a source of operating difficulty in its application or a deterrent in the sale of the liquid. Davison silica gel offers an efficient means of moisture removal from practically all types of liquids, including dielectric oils, waxes, kerosene, benzene, toluene, methyl chloride, Freons, Gase-trons and other halogenated hydrocarbons.

For help with your drying problem see your Davison Field Service Engineer or write.

FREE

Literature on Syloid® AL-1 (prevents pressure build-up in metallic paints) and Syloid® 162 (alkyd-urea flattening agent for synthetic finishes). Mail coupon for literature giving chemical and physical properties, use data, etc.

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Granulated Fertilizers.

Please send me information on

- ☐ Liquid Dehydration
☐ Syloid AL-1
☐ Syloid 162

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When inquiring check CP 6203 on handy form, pgs. 2-3

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Organic
Syntheses

HYDROXY ANISOLE

(Hydroquinone monomethyl ether)

Used in the manufacture of antioxidants and pharmaceuticals, in plasticizers, dyestuffs, and in organic syntheses.



1,4 DIMETHOXY BENZENE

(Hydroquinone dimethyl ether)

Used as a fixative in perfumes, as weathering agent in paints and plastics, in the manufacture of synthetic dyes, as a sun blocking agent in lotions and creams and in organic syntheses.



ANSUL ETHERS OF POLYGLYCOLS

ANSUL ETHER - 121

BENTONE GLYCOL DIMETHYL ETHER
 $(C_{10}H_{18}O_3)$

ANSUL ETHER - 141

BENTONE GLYCOL DIMETHYL ETHER
 $(C_{12}H_{22}O_3)$

ANSUL ETHER - 161

BENTONE GLYCOL DIMETHYL ETHER
 $(C_{14}H_{26}O_3)$

ANSUL ETHER - 181

BENTONE GLYCOL DIMETHYL ETHER
 $(C_{16}H_{30}O_3)$

ANSUL ETHER - 201

BENTONE GLYCOL DIMETHYL ETHER
 $(C_{18}H_{34}O_3)$

PHYSICAL PROPERTIES:

Molecular Weight 154.16
Boiling Point 54°C
Melting Point 342°C
Solubility readily soluble in alcohol, benzene, acetone, ethyl acetate, others. Soluble in water.
Color white to colorless crystals or lumps.
Odor pleasant fragrance

PHYSICAL PROPERTIES:

Molecular Weight 186.18
Boiling Point 54°C
Melting Point 212.6°C
Solubility readily soluble in acetone, ethanol, ethyl acetate and benzene. Insoluble in water.
Color white to colorless lumps
Odor pleasant fragrance (sweet clover)

For more information write for File No. 802. You will receive additional data regarding these versatile fine chemicals.



ANSUL
Chemical Company

INDUSTRIAL CHEMICALS DIVISION • MARINETTE, WISCONSIN

Manufacturers of

INDUSTRIAL CHEMICALS, FINE CHEMICALS, LIQUEFIED GASES, REFRIGERANTS, REFRIGERATION PRODUCTS, AND FIRE EXTINGUISHING EQUIPMENT

MATERIALS

Polar organic liquids gelled by compound of hydrous aluminum silicate . . .

structure provides bodying action, pigment suspension, and control of penetration

Uses: Gelling agent for organic solvents of high polarity, or mixtures of polar and non-polar organic solvents containing a high proportion of polar constituents.

Features: Product imparts stable and predictable thixotropic bodying action, good pigment suspension, and control of penetration. Thickening action is relatively permanent and unaffected by temperature changes. Degree of thickening can be varied by adjusting amount of product incorporated in solvent.

Description: Bentone 18-C is a stable organic compound of montmorillonite, a hydrous aluminum silicate mineral having an expanding lattice. It is supplied as a finely divided cream colored powder, having a sp gr of 1.85. When properly dispersed in solvent, it exhibits plate-like structure having ultimate particle size of $1/2$ - 1μ (maximum) to 0.002 - 0.004μ (minimum).

To obtain maximum effect, compound should be ground into the liquid in a pebble, roller or colloid mill. High speed stirring techniques are also applicable, if sufficient mechanical shear can be applied. Although gels can be produced without application of heat, temp of 150 - 175°F facilitates gelation by reducing amount of mechanical work required.

(Bentone-18C is a product of National Lead Co., Dept. CP, 111 Broadway, New York 6, N. Y. . . . or for more information check CP 6205 on handy form, pages 2 and 3.)

Study reveals water solubility of six Freon compounds . . .

factors include number of fluorine atoms, pressure, and temperature

Recently conducted research study revealed that the solubility of Freon fluorinated hydrocarbon compounds in water depends upon pressure, temperature, and number of fluorine atoms in compound.

Increases in pressure result in nearly proportional increase in amount of Freon dissolved, but solubility decreases as temperature rises. For compounds having same number of carbon atoms, solubility also decreases as fluorine is substituted for either hydrogen or chlorine in molecule.

Included in study were Freon-12 (dichlorodifluoromethane), Freon-13 (monochlorotrifluoromethane), Freon-14 (tetrafluoromethane), Freon-22 (monochlorodifluoromethane), Freon-23 (trifluoromethane), and Freon-115 (monochloropentafluoroethane).

In general, it was found that different types have

When inquiring check CP 6204 on handy form, pgs. 2-3

U.S.I. CHEMICAL NEWS

★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★

Lack of Methionine Causes Hardening of Arteries

In work recently completed at a leading medical school, atherosclerosis, or hardening of the arteries, was produced in *Cebus* monkeys weighing between 1 and 2 kilograms by feeding diets high in cholesterol and low in methionine over periods of 18 to 30 weeks. Within two to eight weeks this diet caused hypercholesterolemia, or high blood cholesterol level, with consequent atherosclerosis and lesions in the ascending aorta and other heart arteries. This condition was also dependent on adequate choline being furnished by the diet. Since both choline and methionine are biological methylating agents, this indicates that sulfur amino acids are directly involved in preventing high blood cholesterol levels rather than methyl-group donors.

It was found that the hypercholesterolemia could be largely prevented by feeding 1 gram per day of DL-methionine as a supplement to the diet. According to the report, once the hypercholesterolemia had been created by the diet, blood cholesterol level could be restored to normal by feeding 1 gram of methionine daily.

Small X-ray Source Offers More Versatility

A small, self-contained source of X-rays for use in industry and medicine has been announced as a likely commercial reality in the near future. The new X-ray source can be made in almost any size, from pellets to larger blocks or sheets, and is said to be entirely self-contained. It consists of a small quantity of radioactive material surrounded by a layer of heavy metal and is claimed to have the advantage of requiring no cumbersome equipment or wiring connections. The radiation emitted is essentially the same as that emitted by X-ray tubes but is reported to be of lower intensity.

Industry will probably use this easier-to-move X-ray source to expand X-ray inspection of vital parts which are difficult or impossible to X-ray with existing equipment. For medicine, the device is said to be potentially more flexible than the radium and radon now used in treating cancer and could conceivably be a valuable supplement to existing techniques.

Hydrazine Used to Remove Free Chlorine from HCl

Hydrazine, a strong reducing agent, has been used to remove free chlorine in the manufacture of chemically pure hydrochloric acid, according to a recent report. The hydrazine combines with the free chlorine to form hydrochloric acid and nitrogen, giving a chlorine-free acid. The amount of chlorine removed is reported to approximate 50 p.p.m. Convenience and economy are said to be the new method's advantages over additional scrubbing or the use of antichlor.

National Petro-Chemicals' New Synthetic Alcohol Plant Now in Production

Produces Industrial Chemicals and Petroleum Products

Production is now well underway at the new \$45 million National Petro-Chemicals Corporation plant at Tuscola, Illinois. Built primarily to produce synthetic ethyl alcohol, the plant will produce about 125,000 gallons a day.

Germanium Photocell Has Many Possible Uses

A tiny, bean-sized germanium photocell is said to be more sensitive to light than vacuum photocells a hundred times larger. It reportedly is so versatile that it can regulate industrial or domestic heating devices or guide missiles to their targets.

Still in the developmental stage, the new unit is claimed to have a comparatively large power output that could make it useful in many industrial applications. Among these applications would be the direct operation of relays to control production processes. Counting, sorting and measuring are other possible uses for the new cell.

The photocell could also serve as a substitute for a Geiger counter. Nuclear particles penetrating a germanium wafer inside the cell produce current which could set off light or sound warning equipment.

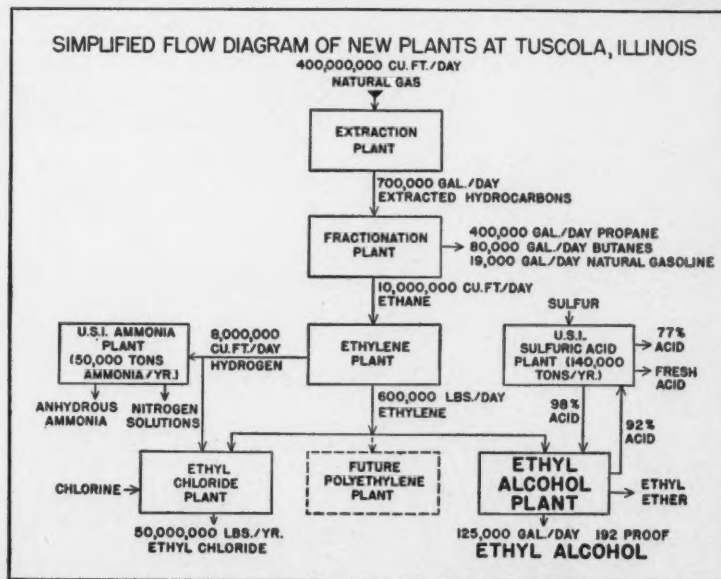
As the flow diagram shows, alcohol is produced from ethylene, which is obtained from the "cracking" of ethane. The ethane in turn is obtained by fractionating hydrocarbons extracted from the starting material: natural gas. The ethylene unit is the largest of its kind, cracking 10 million cubic feet of ethane a day into ethylene and hydrogen.

U.S.I. Plants on Site

To make use of the by-product hydrogen from the ethylene unit, U.S.I. is building a \$7 million ammonia plant at Tuscola which is scheduled to start production in October, 1954. The plant is expected to produce 50,000 tons of ammonia per year. Some of this will be sold as anhydrous ammonia for industrial and agricultural use, but the bulk will be converted to nitric acid, from which ammonium nitrate will be produced and used for the making of nitrogen solutions. The nitrogen solutions will be sold to fertilizer manufacturers.

In the conversion of ethylene

MORE



For detailed information, write for 40-page booklet "From Cornfields to Chemicals."

U.S.I. CHEMICAL NEWS

CONTINUED

New Synthetic Alcohol Plant

to alcohol, large quantities of sulfuric acid are needed. To fill this requirement, U.S.I. built a \$2 million sulfuric acid plant alongside the National Petro-Chemicals facilities. After the acid is used in the alcohol unit, it is partly reconcentrated and is returned to U.S.I. for further fortification and for sale, principally to fertilizer manufacturers. Acid production is 140,000 tons per year.

Not all of the ethylene produced from cracking ethane will be used for alcohol manufacture. Some will serve as raw material for the production of 50 million pounds of ethyl chloride a year. This organic chemical is a basic raw material for the manufacture of tetraethyl lead for high octane gas. Other by-products of the overall process are propane, butanes, and natural gasoline (from the fractionation plant) and ethyl ether (from the alcohol plant).

Further expansion is planned for 1955, when a polyethylene plant is to be completed. Initial output is expected to be about 25 million pounds a year, with additional expansion the following two or three years.

Propane Underground

An unusual feature of the hydrocarbon plant is the storage of 6.3 million gallons of propane underground in limestone caverns—at a capital expenditure only one-third that of surface storage. A tunnel 400 feet long and 330 feet under the earth's surface was drilled, and at right angles to the tunnel, five parallel 450-foot horizontal shafts were mined. These storage facilities are believed to be the second largest of their kind in the world.

National Distillers Products Corporation, of which U.S.I. is a division, manages and operates the National Petro-Chemicals Corporation plant. The new corporation is owned 60% by National Distillers and 40% by the Panhandle Eastern Pipeline Company.

New Booklet on Methionine For Supplementing Feeds

A round-up of current information on methionine as a poultry, swine, dog and mink feed supplement has been published and is available from U.S.I. on request. Entitled "What Methionine Can Do for You", it is a compilation of articles by leading research and technical specialists. Methionine's value as a feed supplement, possible new uses for methionine, and pointers for feed manufacturers on how to supplement their feeds with methionine are among the subjects discussed by the various authors. A pioneer producer of DL-methionine, U.S.I. has stocks located strategically throughout the U.S.A. for the convenience of the feed trade.

Magnesium Possible Fuel For Engines of Future

Magnesium-fueled engines are a possibility when petroleum supplies are exhausted. Powdered magnesium, 2 to 6 microns in diameter, could be an important fuel of the future, according to an authority in the field. Some 300 pounds of powdered magnesium can develop horsepower equivalent to 3,000 gallons of aviation gasoline. Although changes in engine design would be necessary, they would result in fewer working parts.

Reports on New Lubricants

Two research reports reviewing characteristics of new lubricating materials are now available. One describes how turpentine, combined with other ingredients, can be made to form synthetic lubricants, oils and greases for use in low-temperature areas. The second research report is on the frictional behavior of polyethylene, polytetrafluoroethylene, and halogenated derivatives.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

A coloring material compatible with all types of paint products—oil, rubber, alkyd, or varnish based—reportedly has been developed. Eighteen light shades are offered, with darker tones being added to the line. (No. 1000)

To measure specific gravity of flowing material without contact, a system has been devised where nothing but radiation enters the pipe. It is described as useful with flowables of specific gravities from 0.5 to 2.75. (No. 1001)

For quantitative analysis of several metals from the same solution, a controlled-potential electro-analyzer is being introduced. It should speed up routine analyses of alloys and other samples with more than one metal and should be useful to researchers. (No. 1002)

A new cooling tower with fewer construction parts is claimed to simplify erection and maintenance and to give better performance through a bracing system that provides minimum obstruction to the free flow of air. (No. 1003)

A flexible tubing resistant to most inorganic acids and alkalis and many organics is available with inside diameters ranging from 0.12" to 1". It is described as ideal for any temporary or permanent fluid lines where easy-to-handle, sturdy tubing is needed. (No. 1004)

A filter for fuming nitric acid and other corrosives has been announced. Industrial tests indicate that the new filter medium is completely resistant to all common acids and gases. (No. 1005)

A new gasoline additive which is said to prevent preignition and spark plug fouling was recently announced. The knocking which results from preignition reportedly is reduced. (No. 1006)

An alkali-resistant, synthetic filter aid offering porosity and combustibility is being introduced. The new product is a free flowing grade of carbon that is said to provide the same porosity and permeability offered by diatomaceous earth. (No. 1007)

Ordinary cotton cloth won't flame at 4500°F. after treatment with an agent which retains its resistance even after repeated laundering, it is reported. Besides industrial use, the specialty shows promise for draperies, mattress covers and other home furnishings. (No. 1008)

A new diuretic is said to offer health gains for patients suffering from edema resulting from congestive heart failure. A nonmercurial compound unrelated to any existing diuretics, it is administered orally. (No. 1009)

PRODUCTS OF U.S.I.

ALCOHOLS

Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox*—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro* Anti-Freeze
U.S.I. Permanent Anti-Freeze

ETHERS

Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS

Ansol* M
Ansol* PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
Normal-Propyl Acetate

OXALIC ESTERS

Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS

Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Diatol*
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)

Arachem*—modified types
Arodure*—urea-formaldehyde resins
Arofen*—pure phenolics
Aroflat*—for special flat finishes
Aroflint*—room temperature curing phenolic
Aroplaz*—alkyds and allied materials
Aroplast*—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

Allethrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclonene
Pyrethron* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid & Dust
Ratenone Products: Liquid & Dust

INSECTIFUGE MATERIALS

Indalone*
Triple-Mix Repellents

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-halohalide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS

Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G* 80
DL-Methionine (Feed Grade)
Nicotin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay*
U.S.I. Vitamin B₁₂ and Antibiotic Feed Supplements
Vacatone* 40

OTHER PRODUCTS

Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
N-Acetyl DL-Methionine
Nitrocellulose Salts
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.

*Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation

120 BROADWAY, NEW YORK 5, N. Y.

BRANCHES IN ALL PRINCIPAL CITIES

limited w
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and 77°F
same con

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Parmalee
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more info
pages 2 a

Issues 1
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FEBRUAR

limited water solubility. Solubilities varied from 0.026 lb/gal of water at 14.7 psi absolute pressure and 77°F, for Freon-22, to 0.0002 lb/gal under same conditions with Freon-14.

(Summary of paper presented at 1953 annual meeting of American Society of Refrigeration Engineers in Washington, D. C., by Dr. H. M. Parmalee, Kinetic Chemicals Division, E. I. du Pont de Nemours and Company, Dept. CP, Wilmington, Delaware.)

Hydrogenated hydrocarbon offered as extender type plasticizer

Uses: Developed primarily for use as extender type plasticizer for vinyls. Other possible application include: as lubricant, high boiling solvent, and as plasticizer for polystyrene, ethyl cellulose, and asphaltic compositions.

Description: HB-20, as product is known, is a partially hydrogenated alkyl-aryl hydrocarbon. It is an almost colorless, oily liquid possessing a faint pleasant odor. Preliminary tests indicate it to be practically non-toxic from an acute point of view. Other physical properties are listed below.

Sp gr, @ 25/15.5 °C	0.971
Lb/gal (average)	8.08
Viscosity, SUS @ 100°F	55.7
Pour point, °F	minus 54
Flash point, °C	160
Refractive index, @ 25°C	1.5470
Aniline point, °C	minus 15
Distillation range, °C	
first drop	312
95%	370
Flame point, °C	182

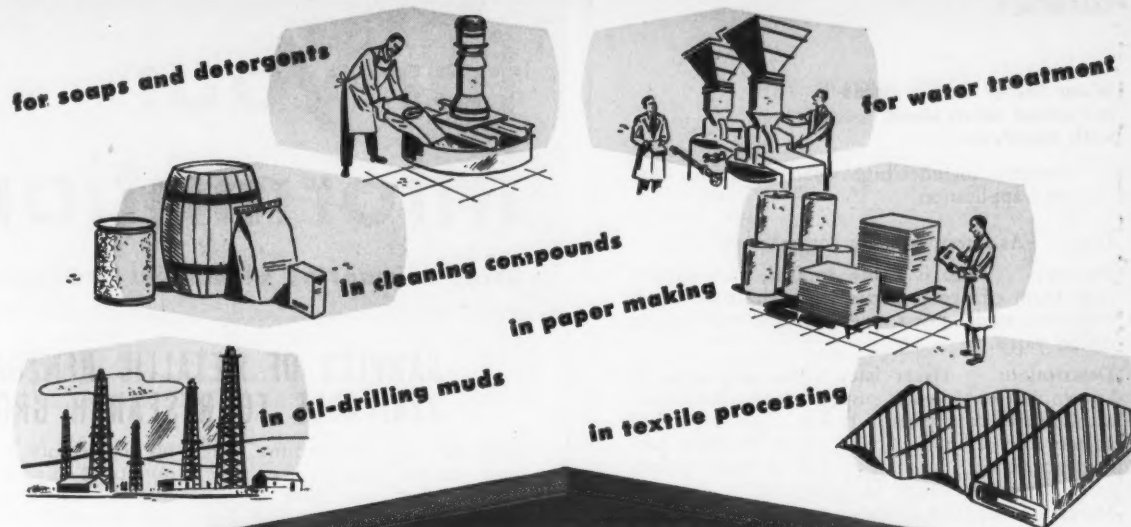
(Product of Phosphate Division, Monsanto Chemical Co., Dept. CP, St. Louis 4, Mo. . . or for more information check CP 6206 on handy form, pages 2 and 3.)

Issues 11-page report on water-soluble cellulosic

Various applications of technical grade sodium carboxymethylcellulose are discussed in bulletin. The water-soluble cellulosic is used as additive for synthetic detergents and built soaps, as textile finishing aid in laundries, and as adhesive base for wallpaper. Information about water solubility, suspending power, adhesive properties, and film-forming qualities is given along with bibliography.

Bul CMC-CT is issued by the Hercules Powder Co., Dept. CP, Wilmington, Delaware. When inquiring specify CP 6207, pages 2 and 3.

For more information on product at left, specify CP 6208 . . . see information request blank between pages 2 and 3.



BLOCKSON Sodium Phosphates

Blockson is the major sodium phosphate producer that serves intimate small company flexibility by providing large and small customers alike with the phosphates they want when they want them . . . with a time-saving absence of red tape.

BLOCKSON CHEMICAL COMPANY
JOLIET, ILLINOIS



Blockson Plant . . . Joliet, Ill.

- Sodium Tripolyphosphate
- Tetrasodium Pyrophosphate, Anhydrous
- Sodium Polyphos (Sodium Hexametaphosphate) (Sodium Tetraphosphate)
- Trisodium Phosphate, Crystalline
- Chlorinated Trisodium Phosphate
- Trisodium Phosphate, Monohydrate
- Disodium Phosphate, Anhydrous
- Disodium Phosphate, Crystalline
- Monosodium Phosphate, Anhydrous
- Monosodium Phosphate, Monohydrate
- Sodium Acid Pyrophosphate
- Sodium Silicofluoride
- Sodium Fluoride
- Hygrade Fertilizer



When inquiring check CP 6209 on handy form, pgs. 2-3

MATERIALS

Wear life of cotton yarns increased when sized with copolymer . . .

features include high loom efficiency and easy application

Uses: As a warp size for cotton yarns.

Features: Size is easily applied, and imparts high loom efficiency, permanency, desirable hand, improved washfastness, and increased wear life to cotton yarns.

Description: Hycar latex 1561, as product is known, is a stable water suspension of a butadiene-acrylonitrile copolymer. It has high degree of affinity for cellulosic fibers, which provides permanency during washings. Use is quite simple and no special change in equipment is required. Material is supplied as water dispersion containing approximately 40% total solids. Requires only dilution with soft water containing polyethylene glycol 200 to be ready for use. Suggested size recipe for 75 gal box would be as follows.

Hycar latex 1561, gal	37
Soft or demineralized water, gal	37
Polyethylene glycol 200, gal	1
Final total solids, %	about 20

(Hycar latex 1561 is product of B. F. Goodrich Chemical Company, Dept. CP, Rose Building, Cleveland 15, Ohio . . . or for more information check CP 6210 on handy form, pages 2 and 3.)

(Information obtained from manufacturer of polyethylene glycol 200, Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 East Forty-Second Street, New York 17, N. Y. . . . or for more information check CP 6210A on handy form, pages 2 and 3.)

Low shrinkage, high strength over wide temp range in silicone rubber . . .

non-toxic material has variety of applications

Uses: As a fabricating material for gaskets, seals, diaphragms, and dielectric fittings and connectors for extreme temperature range and low shrinkage requirements. Containing no toxic additives, silicone rubber can be used safely where cosmetics, food, or pharmaceuticals may be in contact with fabricated parts.

Features: Physical and dielectric properties are retained over temperature range from -100°F to 500°F. Molding, curing, and long term shrinkage characteristics are low — as is compression set. When tolerances are not too close, dies designed for organic rubber goods can be used. Cured product also exhibits high tear resistance.

Description: Silastic 675 is available as a fully compounded molding material, having a Williams plasticity (mils) of 130. After being molded 5 min @ 240°F, then cured 24 hr @ 480°F, this silicone has the following properties tabulated.

for your information...

brief summaries of helpful product news

SAMPLES OF METALLIC BENZOATES AVAILABLE TO RESEARCH GROUPS

Although uses for sodium benzoate are well known, very little attention has been paid to the metallic salts of benzoic acid. For this reason, Monsanto is offering a number of the metallic salts on a development basis and can sup-

ply laboratory and pilot plant quantities to responsible research organizations. The following table lists the solubilities of these compounds in various solvents. Send in coupon for data sheets and research samples.

SOLUBILITIES OF METAL SALTS OF BENZOIC ACID

	Water		Soluble	Common Organics	
	Sol.	Insol.		Insoluble	
Aluminum		X		methanol • ethanol • butanol	
Calcium	X			acetone • ethyl acetate • petroleum ether • toluene	
Chromium		X	acetone • toluene, boiling	ethyl acetate	butanol
Cobalt	X			aromatic solvents	
Copper	X		boiling acetone • boiling butanol	toluene • ethyl acetate	
Iron		X	acetone • butanol • hot toluene • ethyl acetate	toluene	
Lead	X		methanol • hot acetone	toluene • petroleum ether	
Magnesium	X		toluene • butanol	ethyl acetate • petroleum ether	
Mercury		X	toluene • butanol • ethyl acetate		
Tin	X		methanol	ethyl acetate • petroleum ether	
Zinc	X		methanol • acetone		
			benzene • ethyl acetate		



Research Chemist's Corner

CAN THESE COMPOUNDS HELP YOU?

2-MERCAPTOBENZIMIDAZOLE

Formula: $C_6H_4N_2C(SH)NH$

Mol. Wt.
150.19

Structure:



Approximate Properties:

Appearance:
Melting Point:
Solubility:

Pearly flakes
295-300° C.
Soluble in alcohol, ethyl acetate and acetone; insoluble in other common organic solvents.

HEXAMETHYLPHOSPHORAMIDE

Formula: $[(CH_3)_2N]_3PO$

Mol. Wt.
179.2

Approximate Properties:

Appearance: Clear, colorless, mobile liquid
Boiling Point: 66° C. at 0.5 mm. Hg.
98-100° C. at 6.0 mm. Hg.
Crystallization Point: approx. 4° C.
1.4570
Odor: Spicy

Specific Gravity: 1.024 at 25°/25° C.
Wt. per U.S. Gallon: 8.55 lbs. at 25° C.
Solubility: Soluble in benzene, heptane, carbon disulfide, carbon tetrachloride, ethanol, methanol, acetone, ethyl ether, water, ethyl acetate.

Di-Isodecyl Phthalate Offered by Monsanto as a Plasticizer



Di-isodecyl phthalate (DIDP), a general-purpose primary plasticizer for polyvinyl chloride, is now available from Monsanto.

DIDP is similar to di-2-ethyl-hexyl phthalate (DOP), but possesses lower volatility characteristics. This low volatility makes it an extremely useful compound in thin films, upholstery materials, wire compounds, and similar applications.

Processing of DIDP—a clear, oily liquid—is similar to that of DOP. However, slightly higher calendaring, extruding, and dry-blending temperatures may be needed. Essential difference is that DIDP has less solvating action. This property is an advantage in the manufacture of plastisols, where lower initial viscosity and slower viscosity build-up means increased storage life.

Send in the coupon for your copy of Bulletin No. O-108 describing this compound.

Chloramine-T Bulletin Offered by Monsanto

A new bulletin issued by Monsanto gives a complete picture of the properties, compatibility, stability and other important characteristics of chloramine-T. Send the coupon for your copy.



Pictures to Permanents, Thiourea Can Help

Although commonly considered similar to urea, thiourea has many greatly different properties. It is popular as an intermediate and has been used in such divergent applications as photographic materials and in high-quality thio glycolic acid for cold-type permanent wave solutions.

It is also useful in liquefying animal glue; in the manufacture of sulfathiazole, dyestuffs, resins; and in textile applications.

Available as white, free-flowing crystals of high purity, this tautomeric, highly reactive compound may be able to help your product or process. Send coupon for full information.

21% Dicalcium Phosphate Now Produced in St. Louis

Production of 21 per cent feed-grade dicalcium phosphate has now started at Monsanto's Carondelet (St. Louis), Missouri, plant.

The feed industry's swing to the highly concentrated phosphorus supplement has necessitated greater production.

Monsanto DCP is virtually 100% available to the animal and has a fluorine content guaranteed to be less than 100 parts per million. Higher concentration also saves on shipping costs and warehouse space.

This new production location will help Monsanto to better serve the Midwest.

These new facilities in no way affect the present production of feed-grade dicalcium phosphate in both 18 and 21 per cent strengths at the Trenton, Michigan, plant.

4-Way Service on Sodium Phosphates



Monsanto does everything possible to make shipment handling of phosphates easier and more economical for customers.

1. *Unitized shipments* . . . when the customer desires, pallet-sized paperboard bases are placed under each unit, normally comprised of eighteen 100-lb. bags. These units can be loaded and unloaded by standard lift trucks with chisel-point forks. When placed on regular pallets the paperboard-based units may be stacked for warehousing. This system can save you up to ten man-hours on unloading a 54,000-lb. car.

2. *Color-coding* . . . each bag has the product name printed clearly on its face and each phosphate is represented by a different color, displayed on the face and gusset of bag.

3. *Extra bags* . . . ten spare empties are placed in each car to replace bags which are accidentally damaged.

4. *Lined cars* . . . sides and bottom

of all cars are lined with Kraft paperboard to reduce the possibility of bags being torn during shipment.

HB-20 Booklet

Complete information on a new low-cost extender-type of plasticizer is given in a bulletin entitled "HB-20." Published by Monsanto, the new bulletin may be obtained by mailing in the coupon.

Sterox in Superphosphate

A new booklet is available from Monsanto describing the use of Sterox AJ in superphosphate fertilizer manufacture.

The new booklet gives a case history showing how the material is used and then covers such topics as moisture control, acidulation, methods of application and results.

For your copy send in the coupon.



Sterox
Reg. U. S.
Pat. Off.

MONSANTO CHEMICAL COMPANY 2/54
1702 South Second Street, St. Louis 4, Missouri

Please send information on: ☐ 21% dicalcium phosphate ☐ Unitizing

Please send: ☐ Bulletin on Sterox AJ in Superphosphate Manufacture

☐ Bulletin entitled "HB-20"

☐ Bulletin on Chloramine-T

☐ Bulletin on Di-isodecyl Phthalate

Please send sample and/or data sheet (circle "S" if sample is desired; circle "D" if data sheet or information is desired) on:

Metallic Benzozates

S D Aluminum

S D Calcium

S D Chromium

S D Cobalt

S D Copper

S D Iron

S D Lead

S D Magnesium

S D Mercury

S D Tin

S D Zinc

S D Hexamethylphosphoramide

S D 2-Mercaptobenzimidazole

S D Thiourea

Name _____ Title _____

Company _____

Street _____

City _____ Zone _____ State _____

MATERIALS

SILASTIC 675

Typical Physical Characteristics

Color	Red
Sp gr (press vulcanized stock)	1.3
Hardness (Duro, Shore A)	70-80
Tensile (psi)	600
Elongation (%)	175
Brittle point (°F, lower than)	-130
Compression set (method B)	
(22 hr @ 150°C)	15-20
(70 hr @ 150°C)	20-28
Tear strength (lb/in, die B)	75
Water absorption (70 hr @ 212°F)	
Duro change (points)	-2
Volume change (%)	1
Shrinkage (%)	
During molding	1.8
During cure (24 hr @ 480°F)	1.0
During aging (1000 hr @ 250°C)	7
Dielectric constant (10 ⁻¹⁰ c)	3.07-3.05
Power factor (10 ⁻² c)	0.0032
(10 ⁻¹ c)	0.0014
Resistivity	
(after 7 days, 100% RH)	
Surface (ohms)	2.82 x 10 ¹¹
Volume (ohms)	8.58 x 10 ¹¹

In certain applications, however, it may be desirable to modify some properties, even at the expense of others. One way to do this is to alter cure time. Shorter cure times increase tensile and elongation, decrease shrinkage and hardness.

(Silastic 675 is a product of Dow Corning Corp., Midland, Mich. . . or for more information check CP 6212 on handy form, pages 2 and 3.)

Coenzyme from yeast offered as soluble sodium salt . . .

purified by ion-exchange chromatography and over 90% pure by analyses

Coenzyme from yeast, uridine triphosphate (UTP) is now available to qualified investigators as a readily soluble sodium salt. It is free of complex nucleotides such as UDPG and UDPAG, and contains adenine nucleotides as minor impurities. It is analogous in many ways to the coenzyme ATP.

(Coenzyme was isolated at Pabst Laboratories, Research Div. of the Pabst Brewing Co., Dept. CP, 1037 W. McKinley Ave., Milwaukee, Wis. . . or for more information check CP 6213 on handy form, pages 2 and 3.)

Technical data offered on hydrocarbon emulsifier

Technical bulletin contains information regarding a useful aliphatic hydrocarbon emulsifier. Emulsion degreasing, fuel oil desludging, and agricultural spray oil applications are described.

Bul 38 is issued by The Emulsol Corp., Dept. CP, 59 E. Madison St., Chicago 3, Ill. When inquiring specify CP 6214, pages 2 and 3.

When inquiring check CP 6211 on handy form, pgs. 2-3

Sonneborn

HIGHLY REFINED

Petroleum Sulfonates

...made to your specifications

for such uses as...

- rust preventive formulations
- soluble cutting oils
- soluble textile oils
- emulsion degreasing compounds
- fuel oil additives
- emulsifiers for agricultural and insecticide sprays
- special emulsifying formulations
- dispersants and wetting agents

Within the past few years, Sonneborn has developed different types and new grades which now permit a wide range of new applications for which petroleum sulfonates were not previously considered.

Ask Sonneborn about PETRONATES*, the oil soluble series available in various molecular weights; HYPONATES*, oil soluble, oil free; PYRONATE*, a water soluble sulfonate; and the new ISO-PETRONATES*, free flowing at room temperature.

For further information, write to Dept. PS, L. Sonneborn Sons, Inc., 300 Fourth Avenue, New York 10, N. Y.

*Reg. U. S. Pat. Off.



L. SONNEBORN SONS, Inc.

New York 10, N. Y.

When inquiring check CP 6215 on handy form, pgs. 2-3

materials

surface-active agent in cosmetics and detergents imparts good "feel" to skin

Product shows good foaming properties and excellent detergency, disperse: lime soap formed in hard waters

Uses: Product is suggested for use in cosmetic preparations such as shampoos, toilet soaps, shaving creams, and hand lotions; in dry household detergent and soap powders where it acts as anti-dusting, and anti-sneeze agent, and in controlling particle size. Laboratory tests indicate use as wool detergent for fulling and scouring. Tests also show effectiveness as anti-static agent in spinning lubricants for wool, acetate, and nylon yarns during processing; and in anti-static finishes for application to rugs, upholstery, and seat covers.

Features: Product imparts good "feel" to skin after use. Foaming properties are excellent under most conditions. Fabric detergency properties on wool and cotton are fully comparable to best available synthetic detergents. Tests show detergent properties are markedly improved by addition of common builders such as carboxymethylcellulose, tetrasodium pyrophosphate, and sodium tripolyphosphate.

Used in soap formulations, material gives strong lime soap dispersant properties. Performance is about equal in water of any hardness. While not softening hard water or preventing formation of lime soap, it maintains insoluble soaps in colloidal suspension. Soaps in this form are not absorbed by fabric to any appreciable extent. Dispersant action also continues in rinse.

Product is a powerful emulsifying agent in hydrocarbon emulsions and is not affected by hard water.

In scouring raw wool, it reduces grease residue to low values and shows long life in scouring bath. Solution viscosities are relatively high. Only a minimum amount of residual detergent is left in material.

Description: Glucaterge-12 is light-colored, waxy solid. Prepared from N-methylglucamine and coconut fatty acids, this non-ionic surface-active agent has a mild odor, and is miscible with cold water and molten (80°C) stearic acid as well as a number of other materials. Blending with other surface-active agents permits performance characteristics to be varied under a wide range of conditions. Sodium sulfate can be used as a diluent.

Product is stable up to 150°C. Above this, some darkening occurs in the absence of water. Aqueous solutions have relatively high viscosity, but this can be lowered, if desired, by addition of a small percentage of alcohol or certain inorganic salts.

Toxicity is about the same as that of other synthetic detergents. Steel is not corroded by solutions of the material.

Non-foaming Type Available

Glucaterge-28, prepared from N-methylglucamine and cottonseed fatty acids, has low foaming characteristics. Detergent properties respond well to usual type of builder. Lime soap dispersant properties and pleasant after-effect to skin are similar to those of Glucaterge-12. Manufacturer suggests use of product as component in laundry detergents, mechanical dishwashing compounds, and specialty cleaners for hard surfaces.

Both products are available in experimental quantities as 100% active powder or as 50% aqueous solution.

(Glucaterge-12 and Glucaterge-28 are products of Commercial Solvents Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . or for more information check CP 6216, pages 2 and 3.)

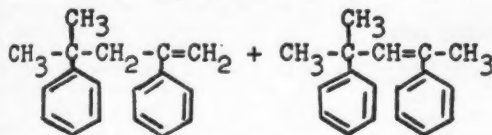
Physical Properties of Glucaterge Solutions

50% Aqueous Solution	Glucaterge-12	Glucaterge-28
Viscosity (cp, 25°C)	7590	(Thixotropic)
Sp gr (25°/25°C)	1.054	—
0.1% Aqueous Solution		
Surface tension (dynes/cm)	30.2	29.6
Interfacial tension (against mineral oil, dynes/cm)	4.9	2.2
Wetting time (Draves-Clarkson test, 3 gm hook, 25°C, sec)	18.7	104.0

Polymerization reactions modified by dimers . . .

soluble in acetone, carbon tetrachloride, benzene and similar solvents

Recently announced is product known as α -Methylstyrene Dimers. A mixture of dimers, as shown in molecular structure, it can be used to modify polymerization reactions such as vinylidene chloride or polystyrene. Another suggested



use is as non-sticking agent in annealing metal products. Product is soluble in acetone, benzene, carbon tetrachloride, and similar solvents. Physical properties are listed in table below.

Mol. wt.	236
Boiling range, °C	311.8-315.3
Sp. gr.	0.987
Wt (lb/gal)	8.24
Viscosity	181.5
Flash point, °F	330
Fire point, °F	350
Color (Gardner), max	3.0
Refractive index	1.569

(Product of The Dow Chemical Company, Midland, Michigan. . . or for more information check 6217 on handy form, pages 2 and 3.)

Chemical, abrasion resistance given to coating formulations by film-forming resin . . .

compatibility with many other resins allow cured film properties to be varied over wide range

Uses: Fields of application suggested by manufacturer include formulations for chemically resistant coatings and finishes, wire insulation, and container linings.

Features: When used in coating formulations, resins impart high resistance to solvents, and to corrosive and oxidizing agents. Compounds also have high heat and abrasion resistance.

Description: G-E 75120 and G-E 75121 Methylphenolic resins are compatible with alkyd, epoxy, polyvinyl butyral, urea, and melamine resins to give films having a wide range of properties, tests indicate. Resins are soluble in most common solvents. Due to the phosphoric acid catalyst, used in amounts ranging from 1 to 4%, about 50% or more of the total solvent must be polar. Minimum cure temp that will give good chemical resistance is about 300°F.

(Film-forming resins are a development of Chemical Division, General Electric Co., Dept. CP, One River Road, Schenectady 5, N. Y. . . or for more information check CP 6218, pages 2 and 3.)

The Industries We Serve — PHARMACEUTICALS



WAB-4971

Age: 69 seconds

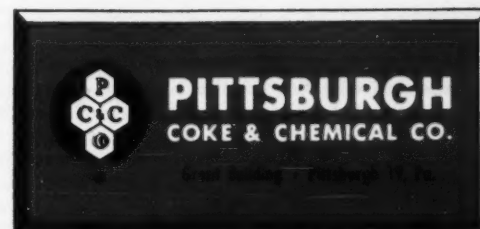
Life Expectancy: 69 years

LUCKY Junior! If he drives his rocket car carefully and doesn't overheat his atomic furnace, he's slated to spend a nice slice of his life in the 21st Century. He won't be haunted by most of today's diseases, that's certain. For medical science, hand in hand with the Pharmaceutical Industry, is already knocking off these killers, one by one. And chemicals from coal are right on the firing line.

Pittsburgh Coke & Chemical Co. is a *basic* producer of many of these vital materials. Some of the first sulfa drugs were made from coal-derived pyridine produced at our plant. Other Pittsburgh coal chemicals are showing bright promise in the experimental treatment of tuberculosis.

To pharmaceutical manufacturers, *Pittsburgh* stands for *purity*. For Pittsburgh coal chemicals are quality

checked from mining to final processing. It's the same story with Pittsburgh dyestuffs, plasticizers, agricultural chemicals and all other products of our ten integrated divisions: Better products for industry and agriculture . . . because Pittsburgh is *basic*!



COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

When inquiring check CP 6219 on handy form, pgs. 2-3

MATERIALS

Outlines latest developments in fluid rubber compositions

Article provides information on several developments in fluid rubber compositions. It points out that fluid rubber compositions contain neither water nor volatile solvent; that they can be poured and set to form elastic, soft rubber or hard rubber articles, and that they use as their starting point a rubber known as rub-bone.

Report outlines use of fluid rubber compositions for manufacture of molds, in which alabastine and synthetic resins are to be cast; for uses as sealing compounds; for uses where calcium silicate is used as filler; and for uses involving hard rubber.

Autumn issue of "Rubber Developments" is available from Natural Rubber Bureau, Dept. CP, 1631 K Street, N. W., Washington 6, D. C. Specify CP 6220, pages 2 and 3.

Styrene emulsion blends with styrene-butadiene for making paints

A 50% styrene emulsion has been developed which is capable of being blended with GRS-2002 styrene-butadiene emulsion. Lustrex Latex 601-50 was developed especially for the paint industry for use in both interior and exterior paint systems. It is also suitable for use in post-plasticized systems in which it can be substituted on a solids basis for other latices containing less emulsified styrene.

(Product of the Plastics Division of the Monsanto Chemical Company, Dept. CP, Springfield, Massachusetts . . . check CP 6221 on handy form between pages 2 and 3.)

Light weight, high H₂O resistance featured in cellular form of polyethylene . . .

Expansion performed with blowing agent which produces material of unconnected cells

Uses: As wire insulation (especially where weight is important factor), and in flotation.

Features: Material has low sp gr and is also reported to have low dielectric constant, good dielectric strength, and high resistance to water penetration.

Description: Product is a cellular polyethylene, expanded with the aid of a blowing agent which produces material constructed essentially of unconnected cells. Material has been extruded on various sizes of wire and has been used to insulate ultra-high frequency television lead-in wires. Cellular polyethylene is said to have only one-half the weight and dielectric constant of regular polyethylene. Insulation costs on a volume basis are lower, because of its expansion.



NEW FATTY AMINE REACTIONS SHOW ANTI-CORROSION, OIL-WETTING, AND BACTERICIDAL PROPERTIES

By Dr. M. R. McCorkle, Technical Director,
Armour Chemical Division

Fatty amines are organic bases or "alkalis" made from fatty acids. They have only graduated from the laboratory in the past ten years. With the fatty amines commercially available, many chemists are looking at them with a great deal of interest.

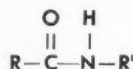
It is the chemical versatility of the fatty amines which offers such great promise. Many of their desirable traits have been inherited from ammonia. Many new and useful characteristics have been added. The fatty amines are substituted ammonias and retain most of the reactivity of that compound. On the other hand, the long, normal alkyl groups derived from fatty acids impart additional desirable properties, such as surface activity, oil solubility, etc.

Cation-activity is perhaps the most important property of the fatty amines. It is this characteristic of the Armeens which is responsible for the corrosion inhibition activity, the oil-wetting characteristics, and the bactericidal properties of their derivatives.

Introduction of other elements into the fatty amine molecule produces modifications in properties such as improved solubility in a given system, detergency, specificity of adsorption, etc.

LONG CHAIN AMINE WITH FATTY ACIDS

By reacting a long chain fatty amine (R', Armeen 18) with any fatty acid the result is an N-Alkyl amide having wax-like characteristics per the following configuration.

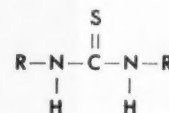


The chain length of the fatty acid will determine the melt point of the amide. Longer chain acids such as Neo-Fats 14, 16 and 18 will produce a product with a melt point in the range of 90-95°C. Short chain acids such as Neo-Fats 8, 10 or 12

impart a melt point of 80-90°C. Such properties permit use of the resultant amide in wax or polish formulation or as a melt point controller in paraffin and microcrystalline compounds.

ADDITION OF SULFUR TO A PRIMARY AMINE

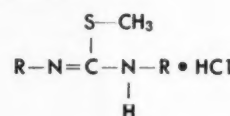
The primary fatty amines react with carbon disulfide to form N, N' dialkyl thioureas.



These derivatives of the fatty amines are generally solids, water insoluble and have limited hydrocarbon solubility. They have chemical properties similar to urea and these are not titratable amines.

PREPARATION OF SULFUR-CONTAINING CATION ACTIVE SALTS

The substituted thioureas shown above react with methyl chloride to give the corresponding S-Methyl isothiuronium hydrochlorides.



These salts are oil soluble and either water soluble or water dispersible depending upon which fatty amine is used to make them. The imine linkage is not titratable but the secondary amine linkage will titrate quantitatively.

The basic reactions and properties of fatty amines are covered in our free booklet, "The Chemistry of Fatty Amines", which also lists all of our primary amines. If the reactions of any of these amines look interesting to you, samples are readily available for your own testing.

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ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY • 1365 WEST 31ST STREET • CHICAGO 9, ILLINOIS



TWO NEW QUATERNARIES

Following the development of the unsaturated secondary amines recently offered in this same column, the Armour Chemical Division has now produced in developmental quantities the corresponding secondary quaternary ammonium chlorides of these parent amines.

These two new quaternaries are Arquad 2S and Arquad 2T, derived respectively from soya amine and tallow amine. The unsaturation in the alkyl chain contributes better solubility in organic solvents than the corresponding saturated secondary amine. Both of these materials are currently supplied as 75% active in isopropanol and at this concentration they are clear liquids at room temperatures and remain flowable down to about 15°C.

As with other quaternary ammonium compounds, they are miscible with both cationic and non-ionic surfactants. They are not generally compatible with anionics such as soaps, sulfates, or the alkyl aryl sulfonates.

These products are industrial grade chemicals and are not intended to be of pharmaceutical quality. They are suggested for applications where the technical grade material is satisfactory and where cost prohibits the use of the highly purified quaternaries.

Arquads 2S and 2T should find applications in a number of fields including secondary oil recovery, flotation, dye solubilization, etc. They exhibit good acid corrosion inhibition in water solution.

See the coupon for free samples and further information on these new Armour Chemicals.



CHEMICALS FOR SOAPS AND DETERGENTS

Armour's complete line of chemicals for the manufacture of soaps and synthetic detergents is covered in this free booklet. Particularly important are the facts about Armour's fractionally distilled high purity coconut fatty acids.

STABLE, LIGHT COLOR DOUBLE PRESSED TYPE STEARIC AVAILABLE IN ARMOUR'S NEO-FAT 18-54



In using double pressed stearic in the formulation of soaps, shampoos, cosmetics, and shaving creams, freedom from yellowing and rancidity is extremely important—perhaps more important than any other characteristic. In Neo-Fat 18-54, Armour has developed a double pressed type stearic which, according to all heat stability tests, is the finest material available.

Through storage time for the raw material, high temperature processing, and shelf-life of the finished product, Neo-Fat 18-54 retains its resistance to oxidation and light color, as do products made with it. Peroxide tests, which measure the amount of oxygen absorbed within a specific period of time, substantiate these claims.

To manufacturers of buffing compounds, emulsifying agents, metallic stearates, and textile finishing agents, the stability of Neo-Fat 18-54 means not only longer shelf-life for their finished products but more uniform processing time. As a result, more production can be obtained without additional equipment.

Various heat stability tests were run on Neo-Fat 18-54 and four competitive double pressed stearic acids. The tests determined the degree of stability to rapid heating, moderate temperatures, extremely high temperature processing, and color stability in soap formulations. In all tests, Armour's Neo-Fat 18-54 proved markedly superior to competitive products.

Specifications include a titer of 53.9 to 54.4, iodine value of 7 max., acid value of 203 to 209, unsaponifiable content, 2.0% max., moisture 5% max., and color Lov. 5.34, a max. of 1.0R-10Y. The average composition runs 46% stearic, 48% palmitic and 6% oleic acids.

Send the coupon for free samples of this double pressed type stearic. Your own laboratory tests will convince you of its merit. Neo-Fat 18-54 is available in 50-pound multi-wall bags.

NOW ALKYD PRODUCERS HAVE A CHOICE OF THREE STABLE NEO-FATS FOR HIGH-BAKE ENAMELS!

NEO-FAT 130 (EXTREMELY LOW COST)

This product was developed for large volume production where color retention is not an essential requirement. Neo-Fat 130 will provide high-grade finishes at a lower cost than our superior grade fatty acids. Specifications for Neo-Fat 130 have been set as follows: Titer . . . 28°C. max.—Iodine Value . . . 125 min.—Acid Value . . . 195 min.—Color (Gardner-1933) . . . 4.

NEO-FAT 125 (HIGH COLOR-LIGHT STABILITY)

Neo-Fat 125 is a low-cost, heat-stable, light colored fatty acid raw material for the alkyd industry. Its heat and color stability carry through all stages of alkyd manufacture—raw material storage, alkyd cooking, finished alkyd storage, and exposure after application.

Alkyd processors are assured a faster, more uniform cooking time with this product. Each lot of Neo-Fat 125 must conform to rigid quality control specifications. An alkyd is then prepared and subjected to color, processing and drying time tests to guarantee a superior raw material for high-grade resins. Hence, the complete performance characteristics of Neo-Fat 125 remain constant from one shipment to the next. As a result, Alkyd processors may schedule each production run more accurately, and

at the same time know in advance exactly what the final properties of each resin formulation will be. Neo-Fat 125 specifications are: Titer . . . 25°C.—Iodine Value . . . 124 min.—Acid Value . . . 196-202—Color (Gardner-1933) . . . 4.

NEO-FAT 140 (NON-YELLOWING, LONGER LASTING)

Neo-Fat 140 provides excellent non-yellowing characteristics for alkyds, whether pure white or pastel. Faster processing time and ease of handling are other advantages of Neo-Fat 140. A titer of 5°C. max. means that Neo-Fat 140 can be exposed to temperatures as low as 39-40°F. without the slightest solidification. Thus, you can do away with the expense of hot storage rooms.

A higher iodine value (140-143) and low saturated fatty acid content yield more double bonds per gallon of fatty acids, giving better dry and harder alkyd finishes with extremely good flexibility, even at 50°F. Specifications for Neo-Fat 140 are: Titer . . . 5°C. max.—Iodine Value . . . 140-143—Acid Value . . . 197-202—Color (Gardner-1933) . . . 2.

Take advantage of this interesting choice in Armour chemicals. Send the coupon for free samples of all three of these fatty acids for alkyd resins.

ARMOUR BOOKLET PRESENTS NEW USES FOR INDUSTRIAL OILS



Oils for antibiotics and air filtering, inks and insecticides, telemotors and tobaccos, agricultural spraying, paint oils, metal cutting, core oils, and pharmaceutical oils! These are just a few of over 70 uses listed for industrial oils on the last page of Armour's new free booklet.

This valuable booklet contains specific information on many important industries that use industrial oils. The questions that you want answered are answered here—applications, sampling, testing, handling, shipping, storing, and even the federal tax structure on industrial oils is included!

Specifications and suggested uses for the many Armour industrial oil products are presented for your benefit. Send the coupon with your letterhead for your free copy of this valuable new booklet.

Product readily floats in water. Sp gr is 0.47. It is resistant to corrosion by salt water, most acids, alkalis, and oxidizing agents.

Varying degrees of expanded material can be produced by mixing standard material with regular grades of polyethylene.

(Cellular polyethylene is product of Bakelite Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 260 Madison Ave., New York 16, N. Y. . . or for more information check CP 6223 on handy form, pages 2 and 3.)

Announce new source of 4-vinylpyridine

Added to manufacturer's list of chemicals is 4-vinylpyridine. Its ability to form polymers and copolymers makes it useful in formulations for bonding rubber. Affinity of the pyridine nitrogen also suggests usefulness in improving dyeing characteristics of some synthetic fibers.

Compound reacts with sulfurous acid to form pyridylethane sulfonic acid; with nitrous acid, it gives nitroethylpyridine; with alcohols, pyridylethyl ethers are formed; amines give pyridylethylamines; mercaptans form pyridylethyl mercaptans, and ketones form pyridyl ketones.

(Product of The Reilly Tar and Chemical Corp., Dept. CP, Merchants Bank Bldg., Indianapolis 4, Ind. . . or for more information check CP 6224 on handy form, pages 2 and 3.)

Accelerator masterbatched with GR-S increases weighing accuracy

Tetramethyl thiuram disulfide masterbatched 50:50 with GR-S offers more accurate weighing in recipe and eliminates dusting. Kure-Blend MT is available in crumb form and may be added in Banbury or on open mills. GR-S antioxidant is non-staining.

(Product of Harwick Standard Chemical Co., Dept. CP, 60 S. Seiberling St., Akron 5, Ohio . . or for more information check CP 6225 on handy form, pages 2 and 3.)

Study covers many aspects of granular carriers

Report studies various aspects of granular attapulgite for soil pesticide formulations. Properties of the granular carriers, formulations, and application techniques are covered in the 7-page study.

"Soil Pesticide Study" is issued by Attapulgus Minerals & Chemicals Corp., Dept. CP, 210 W. Washington Square, Philadelphia 5, Pa. When inquiring specify CP 6226 on handy form, pages 2 and 3.

Send literature:	<input type="checkbox"/> The Chemistry of Fatty Amines	<input type="checkbox"/> Arquads Booklet
	<input type="checkbox"/> Industrial Oils Book	<input type="checkbox"/> Chemicals For Soaps & Detergents
Send samples:	<input type="checkbox"/> Arquad 25	<input type="checkbox"/> Arquad 2T
	<input type="checkbox"/> Neo-Fat 130	<input type="checkbox"/> Neo-Fat 125
		<input type="checkbox"/> Neo-Fat 140
Name	Title	
Firm		
Address		
City	Zone	State

When inquiring check CP 6222 on handy form, pgs. 2-3

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When inquiring check CP 6227 on handy form, pgs. 2-3

MATERIALS

Report on physical properties of synthetic organic chemicals

The 1954 edition of annually issued guide for users of organic chemicals, gives details on "Physical Properties of Synthetic Organic Chemicals." Data on more than 330 products and 36 new chemicals are treated in 20-page booklet. Chemicals are arranged by family groups and data on application and physical properties are given in tabular form.

"Physical Properties of Synthetic Organic Chemicals" is issued by Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp., Dept. CP, 30 East 42nd St., New York 17, N. Y. Specify CP 6228, pages 2 & 3.

Highly reactive source of cobalt available in hydroxide

Uses: Applications in manufacture of cobalt paint driers, as additive in lithographic printing inks. Also in preparation of other cobalt-containing products.

Features: Product is a highly reactive source of cobalt. It is of uniform quality and has good stability in storage.

Description: Available in 30-lb cartons, Cobalt Hydrate is a free flowing powder, assaying 62 to 63% cobalt (as metal).

(Cobalt Hydrate is a product of Witco Chemical Co., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . check CP 6229 on pages 2 and 3.)

Aids formulation of lubricant for rubber products

Uses: Graphite dispersion can be used in formulating lubricants for use on rubber parts.

Features: Dispersed in a liquid of low viscosity, product makes a penetrating rubber lubricant. The colloidal graphite provides residual lubrication long after liquid has dried out or washed away.

Description: Glydag B is a dispersion of colloidal graphite in 1,3-butylene glycol.

(Product of Acheson Colloids Company, Dept. CP, Port Huron, Mich. . . . check CP 6230 pages 2 and 3.)

Explains use of ethyl cellulose in specialty coatings

Role of ethyl cellulose in specialty coatings is described in 13-page technical booklet. Starting formulations, applications, and information about solvents and stabilizers used in ethyl cellulose coatings are included.

Bul "Ethyl Cellulose in Specialty Coatings" is issued by Hercules Powder Co., Inc., Dept. CP, Wilmington, Delaware. Specify CP 6231, pgs. 2 and 3.

Materials, production techniques covered in plastics handbook

Thirteenth edition of reference work on plastics materials and production methods is working guide for selection and use of commercially available plastics. The 943-page book contains a series of charts covering properties and processing peculiarities of plastics resins and compounds. Properties and uses of 257 solvents for plastics are covered in a 16-page chart. Other major sections of the book are: Engineering and Methods, Resins and Molding Compounds, Chemicals for Plastics, and Fillers and Reinforcements. Buyers' directory covers suppliers of equipment, materials, and services used by plastics field. Exhaustive bibliography covers properties and testing.

Information on how book may be obtained can be had by writing Circulation Dept., Breskin Publications, Dept. CP, 575 Madison Ave., New York 22, N. Y.

Protective colloid, high dispersion give anti-flooding properties to black pigments

Black dispersions for tinting paint formulations have maximum particle dispersion and incorporate surface-active agents to prevent re-agglomeration of black particles when pigmenting paint. Flooding is minimized in all cases.

Manufacturer accredits control of electric charge on particle for these properties.

(Black Shield Carbon Black Dispersions are products of Carbon Dispersions, Inc., Dept CP, 27 Haynes Ave., Newark 5, N. J. . . . or for more information check CP 6232, pages 2 and 3.)

Tagged by radioactive carbon, fungicide action observed

Studies of two well known industrial fungicides, tagged with radioactive carbon, help in understanding mechanism of deterioration caused by fungi. Fungus cells and spores were treated with radioactive 8-hydroxyquinoline and Cu-8-quinolinate. Movements in cells were measured by radioactivity changes.

Observations: (1) Protein fraction contained highest concentration of fungicide. (2) Spores took up to 10^5 times as much fungicide per unit weight as did the fungus cells. (3) Spores from fungi grown on radioactive media contained radioactive carbon. (4) Amount of fungicide entering cells was affected by changes in acidity.

It appeared that both fungicides acted in much the same way, and not by two mechanisms.

(Studies made by D. E. Barnes and G. A. Greathouse, Dept. of Chemical Engineering, University of Florida, Gainesville, Fla.)

NEW POLYMERS AND COPOLYMERS

from vinyl acetate

**toughness
and water resistance**

RESYN 12K-51

Designed for qualities you want

—a polyvinyl acetate emulsion integrally plasticized. Deposits strong, tough, flexible, water resistant films. Further plasticizing often unnecessary. Are you interested in these properties:

Tensile on free films, 2,200 psi. Elongation 300%.

Flexibility equivalent to about 10% plasticizer on ordinary polyvinyl acetate solids. Flexibility permanent—no migration or evaporation.

Water resistance shown by film on glass withstanding about 500 wet rubs. Ordinary polyvinyl acetate emulsion films fail in less than 50 wet rubs.

Gloss on air-dry 3 mil (wet) films, Gardner 60° Glossmeter, readings per mil:

Ordinary polyvinyl acetate 5-9
RESYN 12K-51 27

DATA

Solids	55%
pH	4-5
Particle Size	Mostly under one micron
Viscosity	About 2,000 cp



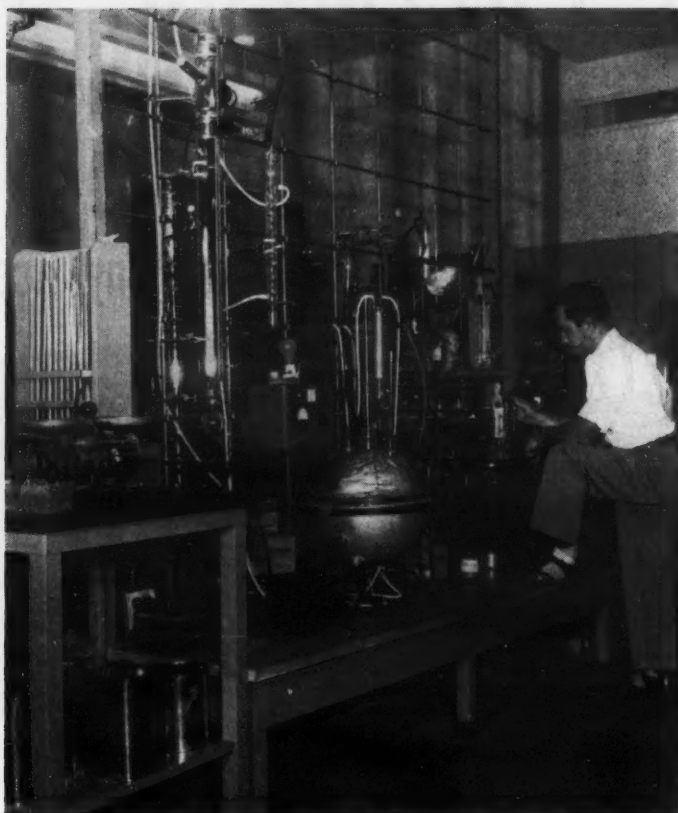
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National Starch Products Inc.
270 Madison Avenue, New York 16, N. Y.
Please send me a pint of Resyn 12K-51, and practical information on its use.

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Company _____
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1—Laboratory fractionating column used in analysis of the ethanolamines and other products

development of ethanolamines illustrates how—

Six steps aid production of petrochemicals at Jefferson Chemical

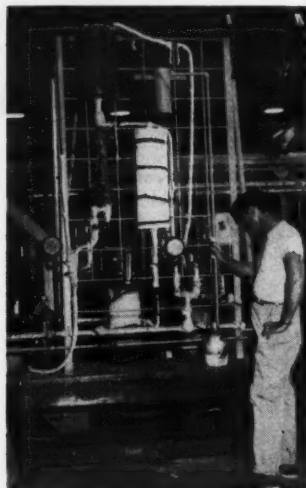
Recently opened research and pilot plant facilities at Austin, Texas and plant at Port Neches are utilized to convert waste refinery gases to useful compounds

One example of the imaginative program, in which petrochemicals are made from waste refinery gases at Jefferson Chemical Company, is the six steps made available from laboratory to commercial production of a material in place of the conventional three or four. Development of the ethanolamines will be described to illustrate how these versatile facilities are utilized to obtain volume production of a high quality material at an earlier date than would otherwise be possible.

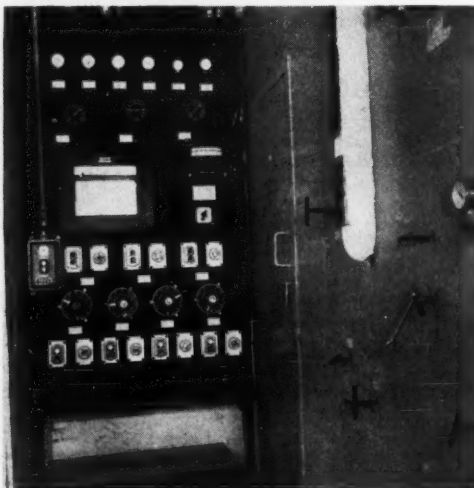
Four of the stages are provided at Jefferson's recently opened research center at Austin, Texas and the remaining two at company's plant at Port Neches, 250 miles away. Although all of the steps are not necessarily used for the development of any one chemical, as will be evident in the discussion of the ethanolamines, they are available when needed. While the same terminology may not be used for the six steps by everyone concerned, they may be described as follows:

- 1—Laboratory
- 2—Pre-pilot
- 3—Pilot plant
- 4—Semi-commercial
- 5—General purpose commercial
- 6—Commercial

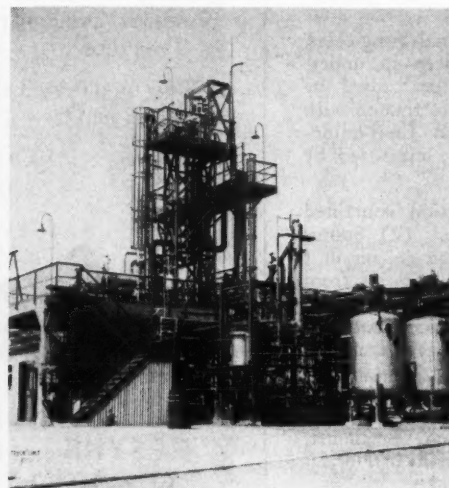
2—Pre-pilot unit used for making glycol ethers



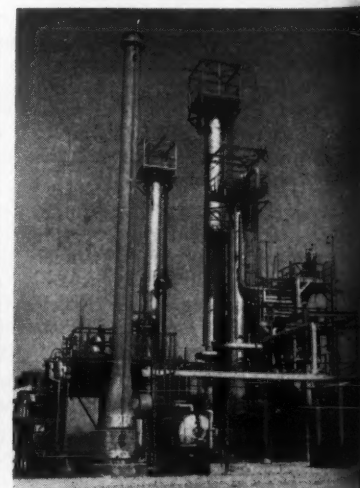
3—Panel board and controls for high pressure ethylene carbonate pilot plant unit



4—Semi-commercial unit at Austin can produce fairly large quantities of material



5—General purpose unit at Port Neches provides needed flexibility



6—Pro...



Accompanying photographs with numbers corresponding to steps illustrate typical equipment available. For the first step, the answer to a laboratory man's dream may be found at Austin, with the latest equipment and far more space available than is needed at present. Pre-pilot step is used to carry process past the laboratory stage without going to full-scale pilot operations. Fourth step, for semi-commercial operation, takes place in equipment at Austin, known as the EOF (Experimental Output Facilities) unit. Fairly large quantities can be made here for market development and industrial needs.

Fifth step occurs at Port Neches in a General Purpose Unit, which is sufficiently flexible for use in a number of different processes. A process can be further developed here until a permanent plant is built. Another flexible plant installation, to be known as the Experimental Unit, is being constructed at present to be available for this fifth step also. Sixth step is, of course, the permanent commercial plant.

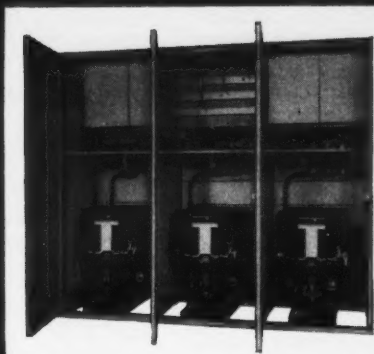
When work was undertaken to develop the ethanalamines, company was already manufacturing ethylene oxide, ethylene glycol, and ethylene dichloride. Refinery gas, which is a mixture of methane, ethane, ethylene, and propane, is piped from Texaco's polymerization plant at Port Arthur. A Girbitol unit removes the hydrogen sulfide by countercurrent scrubbing with ethanalamines. Gas is then cracked in a furnace to produce ethylene.

Ethylene oxide is formed from ethylene through the chlorohydrin route, using a mixture of chlorine and water, then final treatment with lime. Ethylene oxide can then be converted to glycol by hydration. It was known that amines could be produced by reaction of ethylene oxide with ammonia as follows:

(Continued on next page)

6—Process unit for ethanalamines at Port Neches worked satisfactorily from the beginning

"Starting Line-up"



Rear view of HALC Controller Line-up. Bus covers provide maximum protection for personnel and equipment. Starters may be equipped with either oil-immersed or air-break contactors . . . installed in the same space. All components are readily accessible for maintenance.

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Type H Starters

FOR 2300 TO 3000
VOLT MOTORS

FACTORY ASSEMBLED CONTROL GROUPS ARE

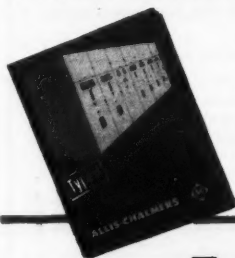
► Easy to Install ► Simple to Expand ► Attractive in Appearance

The factory assembled line-up of Type H Starters affords the many advantages of centralized high voltage control for an entire department or plant. One attractive, space-saving group takes the place of many separate cabinets and components. Planning and purchasing are simplified. Installation is quick and easy — only one incoming power feed-er required. Internal bus and convenient wiring pro-

visions plus standardization of cubicle size facilitate the addition of starters.

Allis-Chalmers Type H Starters may also be used singly. Each starter is a complete control unit. Contactors, protective devices, meters, relays . . . all the coordinated components necessary for maximum protection of man, motor and machine are engineered into each starter.

A-4217



New Bulletin — Type H Starters are built in a wide range of ratings for squirrel-cage, wound-rotor and synchronous motors . . . for full or reduced voltage . . . reversing or non-reversing . . . with plugging, dynamic braking and multi-speed features. New bulletin 14B6410B tells the complete story. See your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

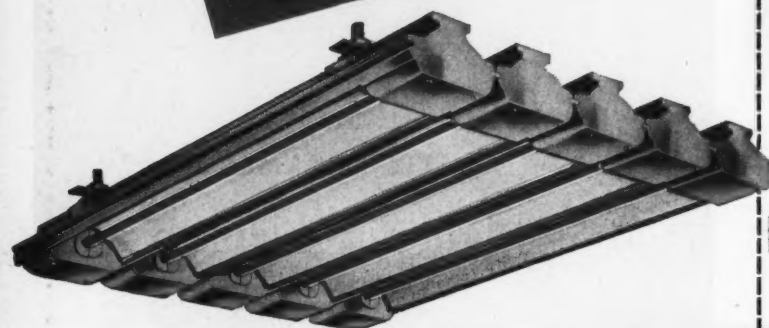


When inquiring check CP 6234 on handy form, pgs. 2-3

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CHROMALOX all-metal electric radiant heaters

Get all the advantages of infrared heat and more—at a fraction of former costs with the new and improved CHROMALOX heating principle. All-metal construction, high heat intensity, infrared radiation that's "color blind" and heat that's infinitely variable, have proved CHROMALOX Radiant Heaters superior for over 300 different uses in more than 1500 plants. If you use heat for baking, drying, preheating, curing, degreasing and similar applications, CHROMALOX Radiant Heaters can very likely give more satisfactory results. See for yourself how these infrared units up output, improve uniformity, reduce costs.

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- ☐ Drying Cellophane
- ☐ Preheating strips
- ☐ Preheating cloth
- ☐ Curing vinyl
- ☐ Post-forming
- ☐ Curing tubing

METALS

- ☐ Heating molds
- ☐ Degreasing
- ☐ Paint baking
- ☐ Drying piston rings
- ☐ Baking wrinkle paint
- ☐ Welding preheating
- ☐ Drying automotive parts
- ☐ Preheating steel rolls
- ☐ Dehydrating refrigeration coils

GLASS

- ☐ Drying bottles
- ☐ Heating safety glass
- ☐ Setting dye on glass cloth
- ☐ Preheating lenses
- ☐ Drying mirrors

ELECTRICAL

- ☐ Baking armatures
- ☐ Drying marine equipment
- ☐ Sealing headlights and television tubes
- ☐ Drying varnished wire
- ☐ Drying carbon resistors
- ☐ Drying color coding

FOUNDRIES

- ☐ Drying sand cores
- ☐ Skin drying of molds
- ☐ Comfort heating

and many other Applications

EDWIN L. WIEGAND CO. Radiant Heater Division

I am interested in infrared heat for _____

- ☐ Send me application file on uses I have listed.
- ☐ Ask factory representative to contact me.
- ☐ Send Chromalox Catalog on Industrial Heaters.

Name _____
Company _____
Address _____
City _____ Zone _____
State _____ IC-61

FOOD

- ☐ Warming
- ☐ Drying baking pans
- ☐ Dehydrating crackers
- ☐ Baking biscuits
- ☐ Dehydrating coconuts

TEXTILES

- ☐ Dehydrating braided material
- ☐ Drying Nylon thread
- ☐ Dehydrating woolen cloth
- ☐ Setting flock

RUBBER

- ☐ Curing
- ☐ Heating rubber glue
- ☐ Curing latex

PRINTING

- ☐ Ink drying
- ☐ Static elimination
- ☐ Glue drying
- ☐ Drying varnished paper
- ☐ Silk screen drying

CERAMICS

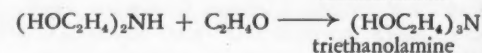
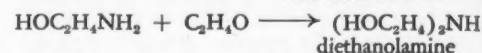
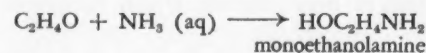
- ☐ Drying frit
- ☐ Drying glaze
- ☐ Drying pottery

MISCELLANEOUS

- ☐ Sealing storage batteries
- ☐ Setting adhesives and cements
- ☐ Curing tobacco
- ☐ Melting wax
- ☐ Drying photographic negatives and prints
- ☐ Dehydrating kraft paper

IDEAS

(Continued from preceding page)



A literature survey was first made of the ethanolamines to determine properties, applications, and possible methods of manufacture. It was necessary to redetermine all of the physical properties of the mono-, di-, and triethanolamines to confirm previous data. Fig 1, showing a laboratory fractionating column used in analysis of product, illustrates type of work undertaken during the first step. After preliminary tests, product was made on a batch scale in the laboratory.

For the pre-pilot step, a small continuous unit similar to that shown in Fig 2 was built. Here process variables were checked and corrosion problems determined. Enough of product was made to overcome purification problems that would be encountered on a larger scale.

Pre-pilot work was so successful that it was felt that pilot plant step could be skipped in this case. With a satisfactory work-up procedure developed, process was moved to the semi-commercial unit which is shown in Figure 4.

Further difficulties which showed up on a larger scale were overcome. Problems of corrosion, color, boiling range, appearance, and stability were solved by proper design of equipment. For example, it was found that a specially designed still would be needed for the plant.

Process worked so well in the semi-commercial stage that it was felt that the fifth step, in which a process is transferred to the General Purpose Unit to iron out further plant problems, could be omitted. With further engineering studies, a permanent plant was built and went on stream producing mono-, di-, and triethanolamine early in 1952. Process worked satisfactorily from the start.

One of the three amines manufactured, monoethanolamine, is a clear, water-white hygroscopic liquid with a distinct ammoniacal odor. Product is used as a gas scrubbing agent for recovery of hydrogen sulfide and carbon dioxide and as an agent in the manufacture of antibiotics. It is also used as an intermediate in the manufacture of various surface active agents, rubber chemicals, and other materials. Specifications of material follow:

Sp gr, 20/20°C	1.017 to 1.027
Boiling range, °C	160 to 176
Color, Pt-Co scale	20 max
Flash pt, °F (open cup)	200

Company's diethanolamine is a clear, colorless, hygroscopic liquid with a mild ammoniacal odor at higher than room temperature. At room temperature it is a white crystalline solid. Chemical is used as an intermediate in manufacture of surface active agents for textile specialties, herbicides, and petroleum demulsifiers. In addition, it is used as a rubber chemicals intermediate and as a gas scrubber in

When inquiring check CP 6235 on handy form, pgs. 2-3



tt
TUBE-TURN

Remember — the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.

Engineered FOR ENDURANCE

THIS TUBE-TURN WELDING TEE is drawn from seamless tubing to a barrel shape—the form every tee wants to assume under pressure. This design, plus the generous crotch radius and thickness, assure exceptional strength and endurance. In tests of representative fittings, bursting pressures have averaged over 25% higher than required by applicable standards.

This extra quality at no extra cost is typical of all TUBE-TURN Welding Fittings and Flanges. For satisfying service, and to fill all your requirements from one reliable source, get in touch with your nearby 'TUBE TURNS' Distributor. You'll find one in every principal city.

The Leading Manufacturer of Welding Fittings and Flanges

TUBE TURNS, INC. LOUISVILLE 1, KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Cleveland • Chicago • Denver • Los Angeles • San Francisco
Seattle • Atlanta • Tulsa • Houston • Dallas • Midland, Texas

Subsidiaries: TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO • PENNSYLVANIA FORGE CORPORATION, PHILADELPHIA, PA.



ENGINEERING SERVICE

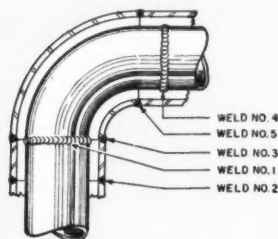
TUBE TURNS' ENGINEERING SERVICE

develops new method of fabricating jacketed fittings

FABRICATION TIME AND COST can be reduced with this method of using welding fittings for directional changes in jacketed piping systems. The jacketed fitting combination consists of long and short radius TUBE-TURN Welding Elbows, with center-line radii closely matching. A tangent on one end of the inside elbow (see cut) extends beyond the corresponding end of the outside elbow. On the other end a short length of pipe is attached to simplify installation.

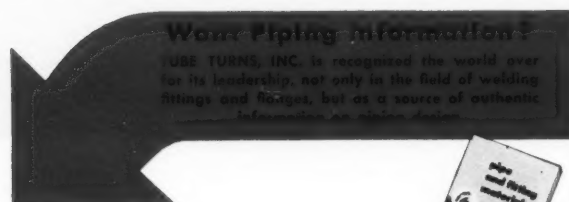
The method eliminates the need for steam and coolant jumpers, and also eliminates flanged joints,

except where disassembly must be provided for. Insulation can be readily applied. Maintenance costs are sharply reduced, as all joints are permanently leakproof. The assembly provides optimum flow conditions, and minimized thermal problems.



Welding sequence for elbow of jacketed system.

This improved technique is another contribution to piping technology by TUBE TURNS' Engineering Service Division—always ready to help you with special piping problems.



TUBE TURNS, INC., Dept. KK-2
224 East Broadway, Louisville 1, Kentucky

Please send me free copy of Pipe and Fitting Materials.

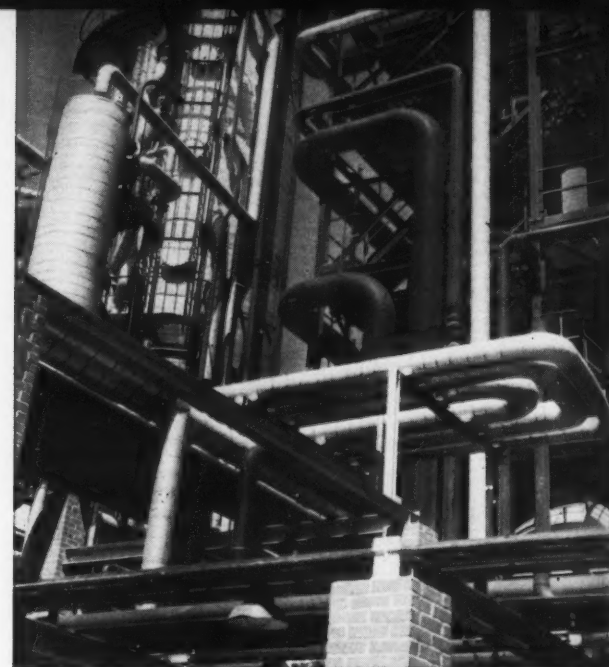
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Company Address

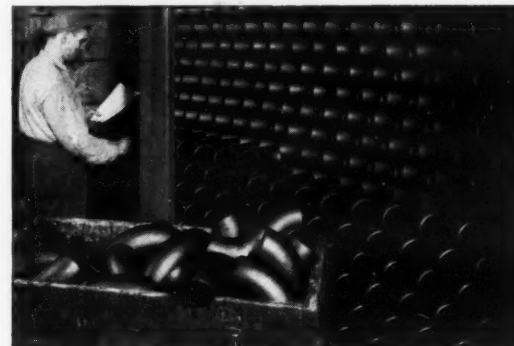
City Zone State

Your Name

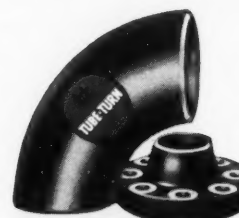
Position



Where absolute safety and reliability are demanded, TUBE-TURN Welding Fittings are specified. Their forged-in strength assures round-the-clock dependability.



SERVICE is the middle name of your nearby TUBE TURNS' Distributor. He can help you fill all your requirements from one reliable source. TUBE TURNS, INC. offers the world's broadest line of welding fittings and flanges, in a wide range of types, sizes, and more than 40 different alloys.



DISTRICT OFFICES

New York	Midland
Philadelphia	Tulsa
Pittsburgh	San Francisco
Cleveland	Los Angeles
Chicago	Seattle
Houston	Atlanta
Dallas	Denver

"tt" and "TUBE-TURN" Reg. U.S. Pat. Off.

TUBE TURNS, INC.
LOUISVILLE 1, KENTUCKY

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IDEAS

refinery operations. Company uses its own diethanolamine to remove H_2S from feed gas. Properties of material follow:

Sp gr, 30/20°C	1.088 to 1.095
Color, Pt-Co scale	40 max
Flash pt, °F (open cup)	280

Third compound, triethanolamine, is a clear, viscous hygroscopic liquid at room temperature. It is used as an intermediate in manufacture of surface active agents for textile specialties, waxes and polishes, herbicides, petroleum demulsifiers, toilet goods, cement additives, and cutting oils. Product is also used as a rubber chemicals intermediate. Properties follow:

Sp gr, 20/20°C	1.122 to 1.130
Color, Pt-Co scale	450 max

In addition to the ethanolamines, ethylene oxide, and glycols already mentioned, company produces propylene carbonate, ethylene carbonate, morpholine, hydroxyethyl morpholine, nonyl phenol, polyethylene glycols, glycol ethers, and the nonyl phenoethylene oxide adducts. All of these compounds were developed with the aid of the six steps that are available. As was true with the ethanolamines, some of the steps were omitted in individual cases. Some of the more recent products have not yet passed the fifth stage.

(Information on ethanolamines or other compounds mentioned may be obtained from Jefferson Chemical Co., Inc., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . or for more information check CP 6236 on handy form, pages 2 and 3.)

Clear telephone conversation possible in noisy areas with electronic unit . . .

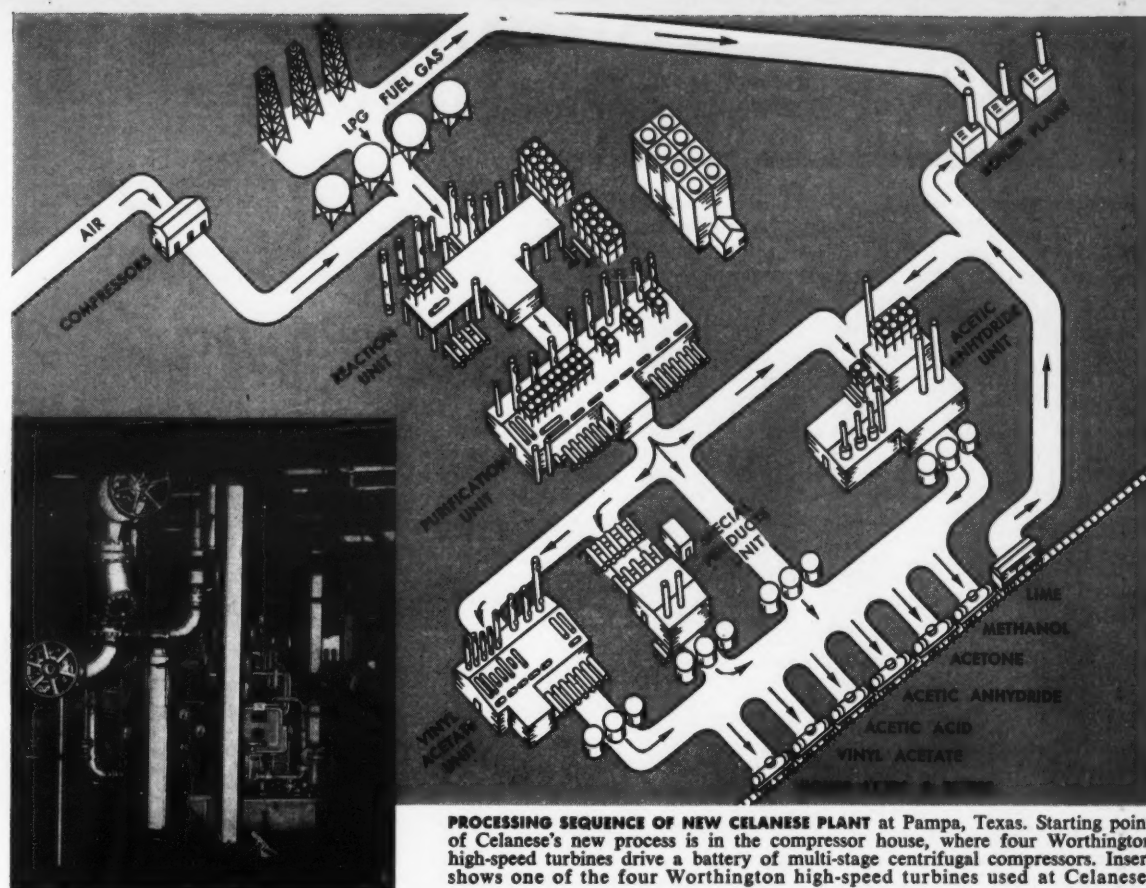
device with redesigned transmitter and receiver looks like a regular telephone

Telephone conversations in noisy plant areas will be made easier with electronic telephone recently announced. Unit requires no booth or enclosure and can be mixed with regular telephones in same system.

Use of a close-talking, dynamic transmitter in handset provides a high order of discrimination against surrounding noise in addition to high quality voice transmission. Volume of receiver and transmitter can be adjusted to suit individual noise conditions. Telephone is also said to automatically eliminate "side-tone."

(Information on Gai-Phone may be obtained from Dept. P, Gai-Tronics Corp., Dept. CP, Reading, Pa. . . . or check CP 6237 on handy form located between pages 2 and 3.)

For more information on product at left, specify CP 6238 . . . see information request blank between pages 2 and 3.



PROCESSING SEQUENCE OF NEW CELANESE PLANT at Pampa, Texas. Starting point of Celanese's new process is in the compressor house, where four Worthington high-speed turbines drive a battery of multi-stage centrifugal compressors. Insert shows one of the four Worthington high-speed turbines used at Celanese.

Four high-speed Worthington turbines drive compressors in new Celanese plant

In May, 1953, Celanese Corporation of America opened their new petro-chemical plant near Pampa, Texas, in the heart of the Panhandle.

By employing a new air-oxidation process, the Pampa plant will produce 1,800,000 lbs. of glacial acetic acid weekly, with 95% normal butane used as a charging stock.

Celanese selected four high-speed Worthington steam turbines to drive the centrifugal compressors used to compress air at the start of the oxidation process. The speeds of the turbines were determined by the nature of the process itself: two of the units are rated 3070 hp at 10,000 rpm, and two are rated 5000 hp at 7500 rpm. The control problem created by this arrangement was solved by using

Worthington Woodward governors with built-in air motors. The four turbine-compressor units are synchronized automatically by instrumentation in the control room.

There's a good reason why Celanese — and so many other leading industrial names — choose Worthington high-speed turbines for compressor and blower drives. They know that Worthington's long experience in compressor-drive engineering assures them of getting exactly the right type and size drive for their needs.

Find out how Worthington can help with your drive problems. Contact your nearest Worthington district office or write for Bulletin 1966 to Worthington Corporation, Steam Turbine Division, Wellsville, N.Y. 13.7

WORTHINGTON



STEAM TURBINES

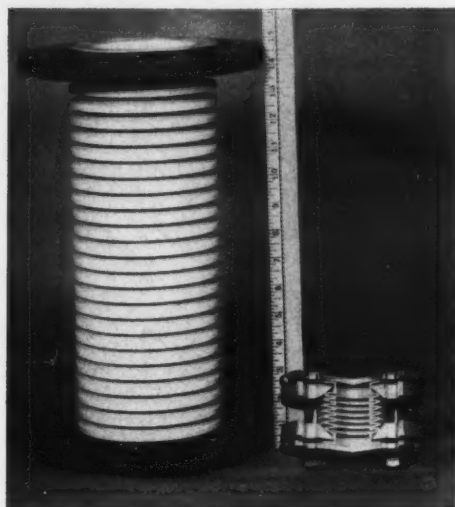
Single and Multi-Stage Turbines • Turbine-Generators • Deaerators • Boiler Feed Pumps • Surface Condensers

A GREAT TEAM IN STEAM

When inquiring check CP 6239 on handy form, pgs. 2-3

"TEFLON" BELLOWS molded by Dore'

are the answer to such piping problems as Misalignment
— Expansion — Contraction — Vibration.

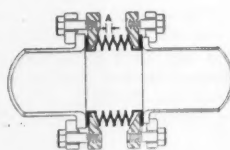


We are successfully molding "Teflon" Bellows in lengths and diameters to meet an ever-increasing range of applications. Shown above is a special long bellows — 14½" x 3" diameter — molded to meet special requirements.

"Quality Control" assures uniform density, close wall tolerances . . . rigid testing and inspection of every finished bellows guarantees adherence to these controls.

Dore' molded "Teflon" Bellows are inert to a wide range of commodities. Built for 25 lb. W.P., they are available in standard sizes of 1" through 12" diameter — 2" to 5" in length. You get immediate delivery of both standard and special sizes. Specify pipe size and flange-to-flange dimension when ordering.

• For "Teflon" sheets — rods — tubes — packing sets — gaskets — tapes and special molded shapes, you'll find it pays to "DO BUSINESS WITH DORE'."



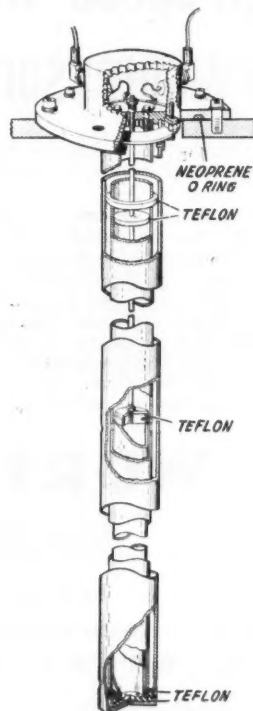
John L. Dore', Co.

SALES AGENTS IN U.S.A. FOR JOHN L. DORE', INC.
MOLDERS OF "TEFLON" AND "KEL-F" SHAPES
P. O. BOX 7772 • HOUSTON 7, TEXAS

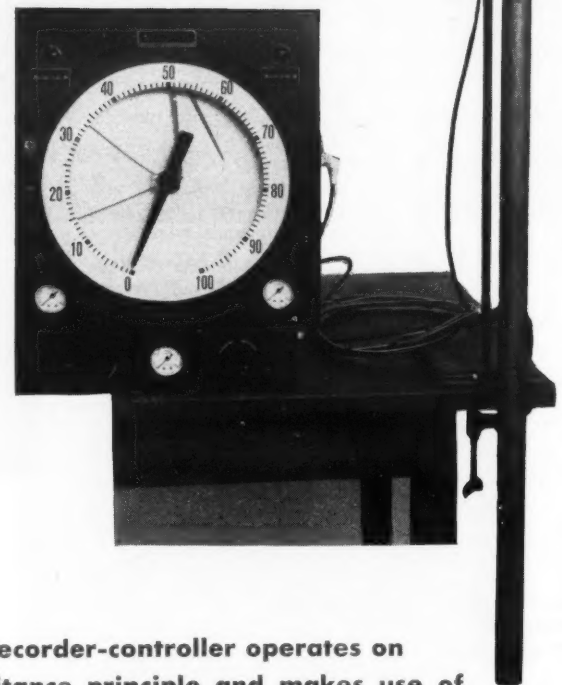
ideas

electronics gage level of LIQUEFIED GASES

Cutaway view of sensing capacitor developed for use with liquefied gases. Gage has no moving parts



Instrumentation system indicates and records on chart (left) level of liquefied gas in capacitance measuring gage (right)



Recorder-controller operates on capacitance principle and makes use of difference in dielectric constants of liquid and vapor states

Recently developed low temperature, electronic instrument automatically measures, indicates, records, and controls the level of liquefied hydrogen, nitrogen, oxygen, or helium. Instrument operates on capacitance principle and makes use of difference in dielectric constants of the liquid and vapor states. It can be used interchangeably with the various liquefied gases merely by changing sensitivity and range controls. Also incorporated is control system that maintains liquid level at predetermined point.

Instrument consists of two units: a sensing capacitor and an indicator-recorder-controller unit. Sensing capacitor forms one element of an AC bridge whose output indicates and records the electrical capacitance, thus the liquid level. Bridge output also controls pneumatic valve which admits more liquid to system when level falls below set point. Basic recorder with adjustable sensitivity covers different ranges and serves liquids with different dielectric constants when used with appropriate sensing capacitor. Instrument can be used to indicate a span of 30" of

When inquiring check CP 6240 on handy form, pgs. 2-3

liquid nitrogen in a 4½' dewar, 36" of liquid nitrogen in a 7' dewar, and 13" of liquid hydrogen in a 7' dewar. Dimensions of sensing capacitors are different in each case.

Sensing capacitor consists of three concentric cylinders. Outer one is grounded shield while inner two form measuring condenser. Outer cylinders are connected by coaxial cable unit to indicator, while innermost is connected by unshielded lead. Formvar enamel coating on innermost tube prevents sparking that might occur on accidental contact between tubes, and which would prove hazardous when working with liquid hydrogen. Tubes are Monel, because of its low thermal conductivity. Teflon is used for insulating spacers. Capacitor is gas-tight both to avoid observation errors that might be caused by moisture condensing between plates, and to provide pressure seal. Maximum peak voltage across sensing capacitor is limited to 30v.

In operation, bridge is initially balanced. A change in capacitance of sensing unit unbalances bridge. Bridge output is reduced to zero by adjustment of a slidewire resistor to point where bridge is again balanced. Position of slider is linearly related to capacitance of sensing unit and therefore to liquid level. Determined liquid level is indicated by a pointer on 25" scale and also recorded on 12" diam chart. Rebalancing operation is automatic. Detector used is a phase-sensitive amplifier whose output is determined by amplitude and sign of capacitance unbalance. Amplifier output energizes a two-phase induction motor which drives slider on resistor wire, restoring bridge to balance.

Sensitivity is such that capacitance change of 10 μmf corresponds to full scale deflection on 25" scale. This corresponds to approximately eight inches of liquid helium. Zero adjustment permits use of tanks with empty capacitances from 120 to 4000 μmf . With empty capacitances less than 600 μmf , span is adjustable from 10 to 200 μmf .

Wide capacitance measuring range permits use of variety of sensing capacitors and makes instrument adaptable to liquids having low dielectric constants. Using sensing capacitor of appropriate design, liquid levels can readily be detected when dielectric constants of liquid and vapor states differ by as little as 0.05.

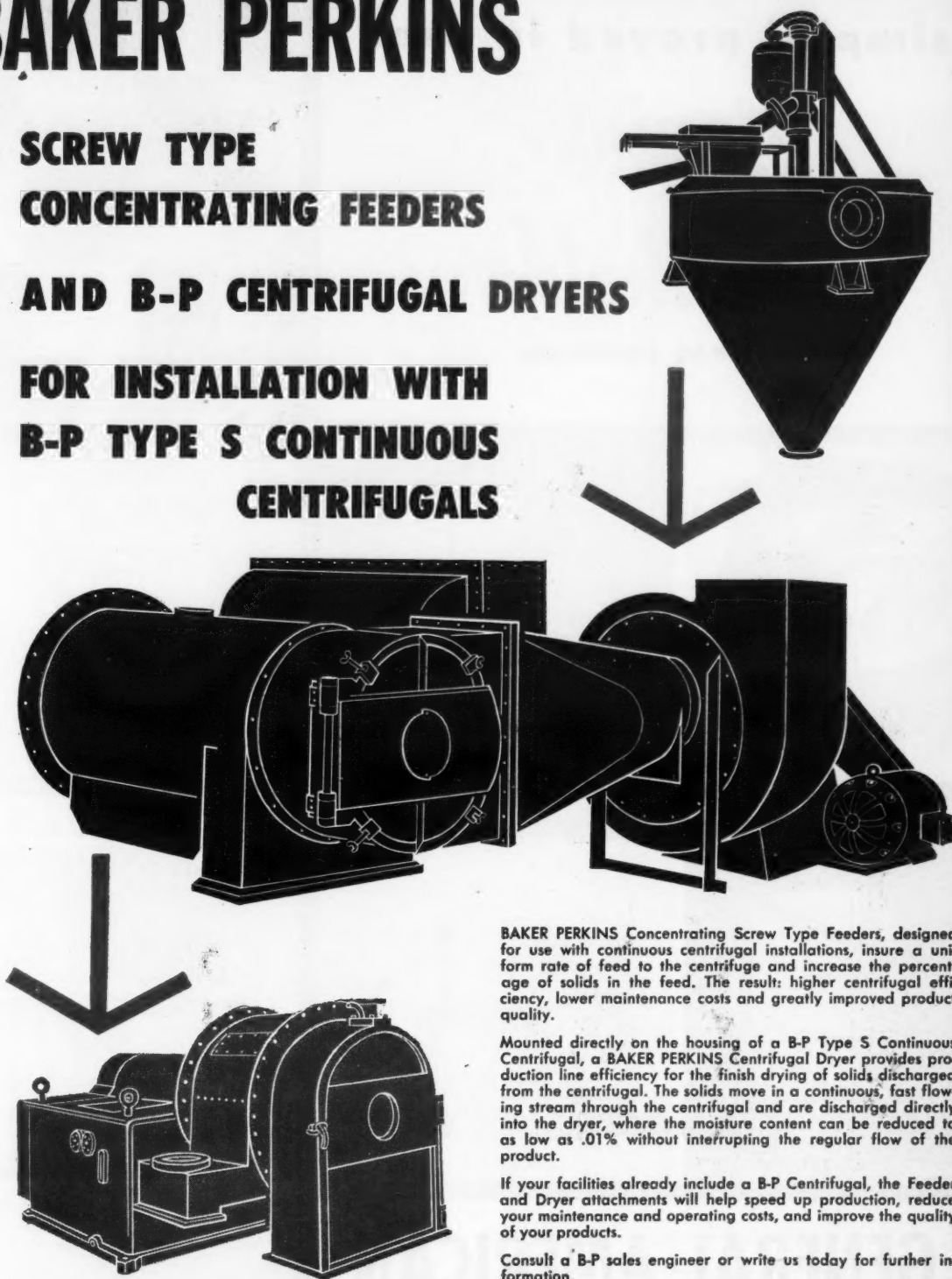
Accuracy of indicator depends on uniformity of construction of capacitor and on precision with which liquid surface can be defined in view of boiling, agitation, and capillary effects frequently present. Test made show an accuracy and linearity within one per cent.

(Instrument developed with the cooperation of the Brown Instrument Division, Minneapolis-Honeywell Regulator Co., by the National Bureau of Standards, United States Department of Commerce, Washington 25, D. C.)

Using Zinc Chloride Solutions?
See density Nomograph — page 202

BAKER PERKINS

SCREW TYPE CONCENTRATING FEEDERS AND B-P CENTRIFUGAL DRYERS FOR INSTALLATION WITH B-P TYPE S CONTINUOUS CENTRIFUGALS



BAKER PERKINS Concentrating Screw Type Feeders, designed for use with continuous centrifugal installations, insure a uniform rate of feed to the centrifuge and increase the percentage of solids in the feed. The result: higher centrifugal efficiency, lower maintenance costs and greatly improved product quality.

Mounted directly on the housing of a B-P Type S Continuous Centrifugal, a BAKER PERKINS Centrifugal Dryer provides production line efficiency for the finish drying of solids discharged from the centrifugal. The solids move in a continuous, fast flowing stream through the centrifugal and are discharged directly into the dryer, where the moisture content can be reduced to as low as .01% without interrupting the regular flow of the product.

If your facilities already include a B-P Centrifugal, the Feeder and Dryer attachments will help speed up production, reduce your maintenance and operating costs, and improve the quality of your products.

Consult a B-P sales engineer or write us today for further information.

BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION, SAGINAW, MICHIGAN

When inquiring check CP 6241 on handy form, pgs. 2-3

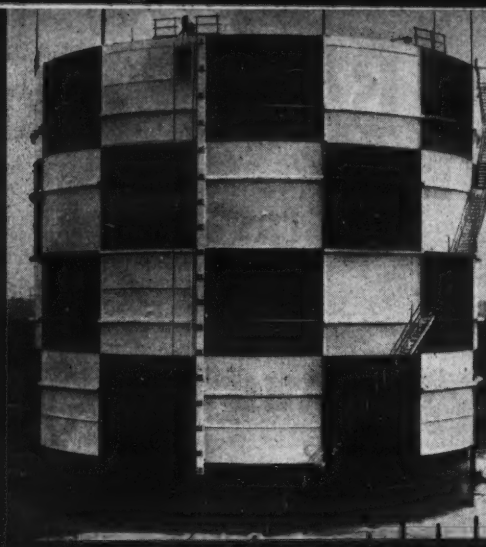
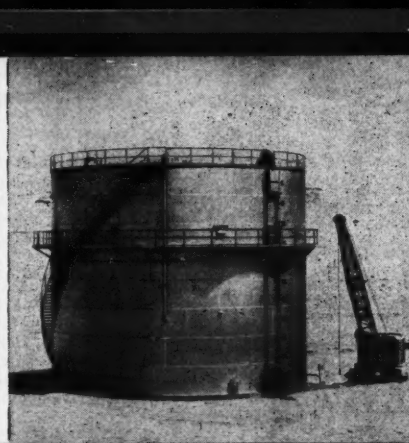
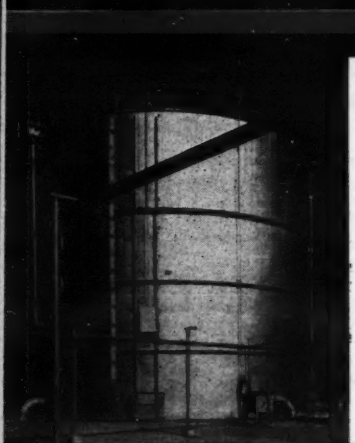
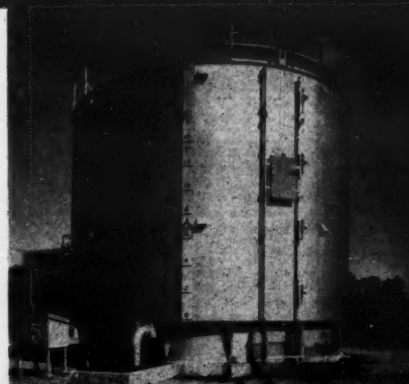
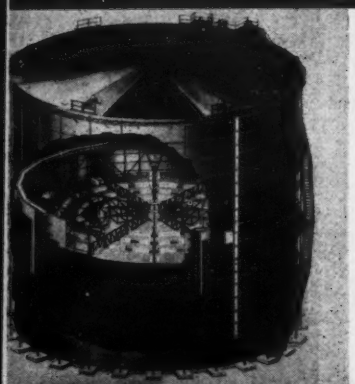
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simple! proved in use!

Wiggins Gasholder

BY GENERAL AMERICAN

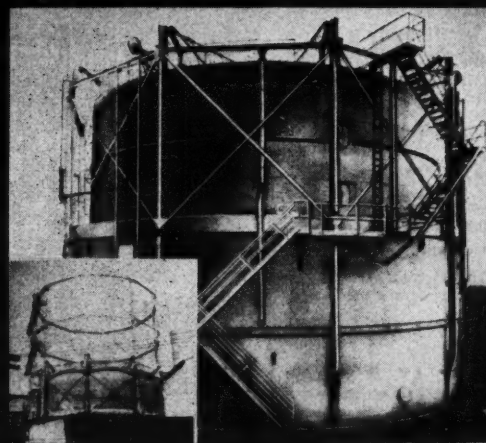


The only gasholder that
uses

**NO WATER
NO TAR
NO GREASE**

The only gasholder that
assures you

**NO WEATHER WORRIES
NO OPERATING COSTS
NO MAINTENANCE
PROBLEMS**



You can convert your old style gasholders
to get the Wiggins advantages

Be sure to get the performance record
on the only modern gasholder before
you plan any gasholder construction.

GENERAL AMERICAN



**TRANSPORTATION
CORPORATION**

General Sales Office: 135 South La Salle Street
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Offices in principal cities

IDEAS

Bauxite ore "de-ironed" by 42" diam pulley at Alcoa . . .

permanent, magnet unit is
one of world's largest

Aluminum Company of America
has recently installed a 42" diam,
38" crown face, 36" belt width
permanent magnetic pulley at the
Port of Entry, Mobile, Ala. Unit,
one of the world's largest and
most powerful, is used by Alcoa
to handle bauxite ore.



Has 36" belt width

Pulley is installed in a 200' long
slope conveyor, operating at 27
rpm, giving a belt speed of 300
fpm, to handle 600 tons an hour
of bauxite ore. Slope on convey-
or amounts to 3 1/8' per 12'
length. Depth of material varies,
and at times runs to 8".

(Permanent magnetic pulley is a
product of The Homer Mfg. Co.,
Inc., Dept. CP, Lima, Ohio . . . or
check CP 6242 on handy form,
pages 2 and 3.)

A guide to selection of pumps

This informative 8-page bulletin
is intended as a guide in the
selection of pumps for certain
applications in industry. Several
types are discussed including
rotary, centrifugal, and vertical
centrifugal units.

Bul S-146 is issued by Taber
Pump Co., Dept. CP, 288 Elm
St., Buffalo 3, N. Y. When
inquiring specify CP 6243 on
handy form located between
pages 2 and 3.



For more information on prod-
uct at left, specify CP 6244
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blank between pages 2 - 3.

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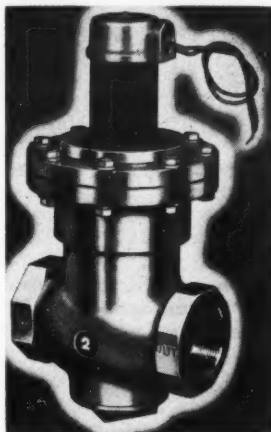
Plant water conservation is more effective with use of solenoid electric valves

Because the major use of water is in the cooling of various machines, such water cannot only be saved from constant flow when the machine is not in use, but it can also be recirculated in order to perform cooling operation more effectively.

Solenoid electric valves used in conjunction with starting switches and thermostatic controls are said to regulate water flow so effectively that it is used only when temperatures build up above a pre-determined level or when machine is turned on for operation. Meter tests show that through thermostatically controlled valves, 60 to 70% of the water is saved. This amount varies with the type of machine or cooling operation performed. Air compressors, heavy presses, and degreasers as well as spot welders are served by such an efficient system, and in large plants the savings effected can run as high as \$16,000 per year, according to valve manufacturer.

Aside from financial savings, use of valves also contributes to a considerable savings in water. This has become particularly important in certain sections of the country where water supplies are quite limited, particularly during the summer months, and any saving of this natural resource can prevent imperiling the municipality.

(Information courtesy of valve manufacturer, Dept. 76, Atkomatic Valve Co., Dept. CP, 545 Abbott St., Indianapolis 25, Ind. . . or for more information check CP 6245 on handy form, pages 2 and 3.)



Valve aids plants by saving on costs and water

Illustrates industrial applications of versatile worm gearing

Ninety-three applications of manufacturer's worm gearing in 20 different industrial classifications are documented in 36-page, 2-color booklet. Gears are available in a wide range of sizes. Standard center distances from 2 to 18" provide ratings to 800 hp. Ratios range from 5:1 to 4900:1.

Bul CD-173 is available from Cone-Drive Gears Div., Michigan Tool Co., Dept. CP, 7171 E. McNichols Rd., Detroit 12, Mich. When inquiring specify CP 6246 on handy form located between pages 2 & 3.



PURECAL . . . whitest pigment extender known



Mr. D. J. Hollestelle, purchasing agent, Acme Quality Paints, Inc.

Mr. G. K. Oxley making a visual comparison of mass tone and relative opacity in the Acme laboratories.

Wyandotte PURECAL passes test in laboratories of Acme Quality Paints, Inc.

Acme has been a maker of high-quality paints, varnishes and enamels for many years. Naturally, they have a great number of products submitted to them for test and evaluation.

Acme was interested when Wyandotte presented their technical data on the use of PURECAL* M in paints. Extensive testing in Acme's own laboratories confirmed

Wyandotte's findings.

Wyandotte PURECAL M is precipitated at the particle size which imparts maximum hiding to any pigment or extender. An extra processing step removes discoloring impurities . . . makes Wyandotte PURECAL the whitest extender known. PURECAL suspends and maintains dispersion of pigments. When used in place of other ex-

tenders, PURECAL M lowers the opaque pigment requirement for equal hiding power.

Wyandotte has a wealth of technical data for you, covering the use of PURECAL in paint. It's contained in a brand-new book, just off the press. Mail coupon, today, for your free copy. Wyandotte Chemicals Corp., Wyandotte, Michigan. Offices in principal cities.

*REG. U.S. PAT. OFF.

Mail coupon for FREE book!



**Wyandotte Chemicals Corporation
Dept. CP, Wyandotte, Michigan**

☐ Please send me data and a sample of Purecal M for use in:

☐ Please send me your free book "Purecal in Paints."
☐ Have your representative call on me.

Name _____ Title _____

Firm Name _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 6247 on handy form, pgs. 2-3

MATHIESON METHANOL

*highest quality for
all industrial uses*

MATHIESON METHANOL

*dependable delivery
in barge or tank car*

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Mathieson Hydrocarbon Chemicals Division
Baltimore 3, Maryland

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Ethylene Glycol • Diethylene Glycol • Triethylene Glycol • Ethylene Oxide • Dichloroethylether • Methanol
Ethylene Dichloride • Sodium Methylate • Hydrazine Products • Chlorobenzenes • Ethylene Diamine

When inquiring check CP 6248 on handy form, pgs. 2-3

IDEAS

How to measure and reduce physical fatigue

Paper by Dr. Lucien Brouha of Du Pont's Haskell Laboratory of Industrial Toxicology describes basic research being done to learn causes and remedies of physical fatigue. It tells how to measure the physiological stress, delves into factors producing fatigue and their physiological evaluation, and shows how work load reduction, heat load reduction, rest periods, adequate worker teams, and adequate water and salt help toward reducing fatigue. Proper choice of an individual for a specific job is emphasized.

Dr. Brouha reveals that thirst cannot be relied upon to indicate need to drink water; drinking of fixed amounts on a regular schedule, as determined by physiological tests, often makes tired employees feel better. Information supplied by E. I. du Pont de Nemours and Company, (Inc.), Dept. CP, Wilmington 98, Del.

Reduces inventory work to "instantaneous" operation . . .

now requires only 3/10" second to find stock balance of any item among 8000

Probably few chemical companies have as complicated an inventory control job as John Plain & Company in Chicago. World's largest wholesale mail order distributor of homewares, company carries about 8000 items in its catalog (not including sizes and colors). During peak season, orders sometimes reach 75,000 a week.

Company has recently installed a digital computer called the Distributon. Heart of the Distributon is a magnetic memory drum which receives a flow of information; sorts it into 39,000 classifications, adds, sorts and registers all totals for instantaneous availability. It is being used to tally orders as they are received and report results immediately. Developed



Entries punched in at desks in foreground are tallied by digital computer housed in cabinets at rear

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(Inform
Company
Cleveland

expressly for this task, computer was designed and constructed at a cost of more than \$500,000. Production costs in quantity will be well under this figure.

Using the machine, ten girls can do the work that formerly required 150 trained tally clerks. Job is also more accurate.

Entries are made on a 10-key keyboard. The unit "1" is entered automatically. If more than one item was ordered, amount is typed. When total greater than 999 is reached, red light flashes and keyboard locks. Should an invalid number be typed, keyboard also locks. Grand total is always visible.

Four operations — recording, sorting, adding, and flashing the total — take only 3/10 of a second. Ten operators may type the same entry simultaneously without overlap. Complete report of totals, item by item, are printed out on tape when desired. Computer can also be used for producing teletype tape, punch card, or magnetic tape records.

(Distributon was designed and built by Engineering Research Associates, Div. of Remington Rand Inc., Dept. CP, 631 Marquette Ave., Minneapolis 2, Minn.)

Automatic liquid gas regulators depend on rubber valves

Rubber inner valves insure proper operation of pressure-reducing regulators which are used in rural propane or butane gas tank fuel systems.

Two rubber pressure-activated valves are used in each Automatic Change-over Regulator manufactured by the Fisher Governor Co. of Marshalltown, Iowa. Operating principle of this regulator permits a constant supply of fuel gas when used on a dual-tank system. Gas is drawn from one tank at a time and when gas pressure in that tank reaches a low point, other tank valve opens automatically.

For perfect operation, rubber valves must seat properly without sticking to metal surface. They must also resist deteriorating effects of liquefied petroleum gas and extreme outdoor temperature changes. Hycar rubber has good oil, gas, chemical, and corrosion resistance, and will not change shape or distort under extreme pressures or temperatures, according to manufacturer's report.

This rubber is also used for valves because it can be bonded easily to metal and it remains resilient at all atmospheric temperatures. A special Hycar rubber compound, which will adhere to brass valve stems and not to other metal surfaces against which it seals, was developed by Associated Rubber, Inc., Quakertown, Pennsylvania.

Two nylon fabric diaphragms in each regulator are also coated with rubber. Again resistance to oil, gas, and varying temperatures is required. Rubber-covered diaphragms must also remain flexible and must not crack or become brittle with age.

(Information courtesy of B. F. Goodrich Chemical Company, Department CP, 324 Rose Building, Cleveland 15, Ohio.)

Take a new look at this vacuum pump

It's Kinney Model VSM 556 . . . 13 cubic feet of free air displacement. Model VSM 556 is now serving in many of the nation's foremost vacuum processing systems. Look at its outstanding features — and at its high pumping speed. Check your own vacuum requirements . . . and then come to Kinney for the most vacuum pump for your money. Send coupon for complete details.

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- ☐ Please send Bulletin V-51B describing the complete line of Kinney Vacuum Pumps.
- ☐ Please have your vacuum engineer call at our plant.

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Company.....

Address.....

City..... State.....

When inquiring check CP 6249 on handy form, pgs. 2-3

Standardaire® Blowers

FOR CHEMICAL PROCESSES

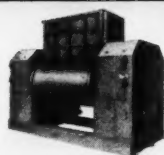
gradual compression...
freedom from shock
...greater output



These important features are working for chemical processors throughout the industry, who are using Standardaire Blowers. Incorporating the first significant blower improvements in many decades, the Standardaire is a unique axial flow positive pressure unit compactly designed for handling gas or air under pressure or vacuum. Employing an exclusive principle of compressing air on a modified adiabatic cycle, with lower mean internal pressure, its wide range of pressure is ideal for adaption to chemical processing. The Standardaire is essentially a high speed unit which permits direct drive by standard motors, while an efficient oil sealing arrangement prevents air contamination.

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The Read Standard Corporation also manufactures a complete line of mixers for laboratory and industrial uses.



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Write today for the complete story on Read Standard Chemical Processing Equipment and Standardaire Blowers.

When inquiring check CP 6250 on handy form, pgs. 2-3

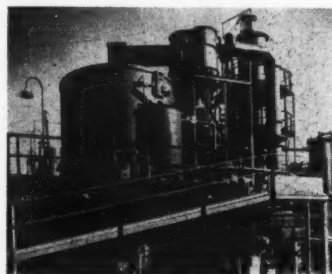
IDEAS

Gold mill tailings used to produce uranium, sulfuric acid . . .

fluidized bed reactor system used in operation

Tailings from South Africa's gold mills are further processed to produce uranium. Metal is recovered by leaching with sulfuric acid. Pyrite, a sulfide also present in the ore, makes a cheap abundant source of acid available on the spot.

Mill tailings are pumped in slurry form into fluidized bed reactor system (FluoSolids) shown in photograph. Here they are im-



mediately brought to roasting temperature of 1500°F. The high strength sulfur dioxide produced is then passed through cyclones and scrubbers before going to the acid plant.

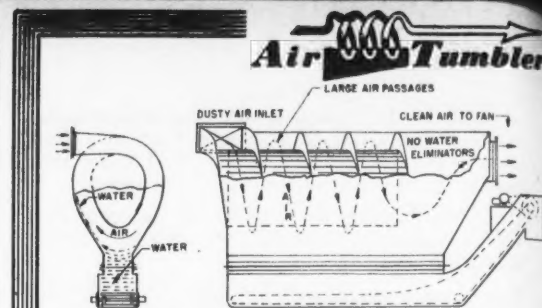
(FluoSolids System is development of The Dorr Company, Dept. CP, Barry Place, Stamford, Conn.)

Grinding and exfoliation service offered . . .

complete lab and testing facilities also available

Designed for pilot work, high volume, and for processors whose volume does not warrant installation of large commercial pulverizing equipment, custom grinding service includes complete laboratory and testing functions. A wide range of materials can be reduced, and fibrous materials exfoliated. Extremely fine pulverization under precise control is available.

(Service is offered by Majac Engineering Co., Dept. CP, 189 Freeport Road, Blawnox, Pa. . . . check CP 6251, pages 2 & 3.)



The Master of **DUST** In Industry

CONSTANT CAPACITY and sustained HIGH EFFICIENCY with a minimum of maintenance are among the most important characteristics of the AIR TUMBLER. They result from its simplicity of design and operation, which dispenses with sprays, pumps, water eliminators, rotating elements, and similar devices.

The AIR TUMBLER in a short time has found its way into every kind of industry in this country and abroad, and has become standard equipment wherever tried.

For further information write to:

Dust Suppression and Engineering Co.

P. O. Box 67 Lake Orion, Michigan

Or to any of the following licensees:

AUSTRALIA Air-Dust Separators Co. Kipp Kelly Limited 13 O'Connell St., Sydney	CANADA 68 Higgins Ave., Winnipeg	BRAZIL Osma S.A. Caixa Postal 4963, Sao Paulo
ITALY Marcelli Aerotecnica Casella Postale 1217, Milano C.	SWITZERLAND Machines Electriques S.A. 59 Rue du Rhone, Geneva	

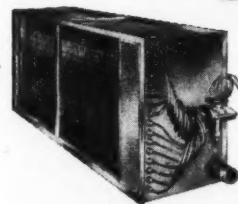
When inquiring check CP 6252 on handy form, pgs. 2-3

Industry Had
Acid Vapor
Heating and
Cooling Problems

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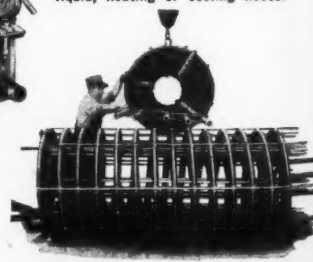
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Rempe Fin Type Coils are ideally suited for handling all types of corrosive air mixtures, gas or liquid, heating or cooling needs.

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When inquiring check CP 6253 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Toughen flexible plastic containers by electron bombardment to withstand high temps

Method for toughening flexible plastics by bombarding them with powerful electron beams was recently announced. This "curing" process crosslinks long, chain-like molecules called polymers which make up these plastics. It is reported that a few seconds' bombardment from a million-volt X-ray machine makes polyethylene bottles stand up under steam-sterilization.

This toughening permits more widespread use of these containers for packaging and storing pharmaceuticals and biological fluids. The latter include blood plasma, which formerly could only be carried in bulky, easily sterilized glass. Process also increases resistance of plastic to destructive action of many solvents.

"Curing" beam of electrons is produced by removing the tungsten target from a million-volt resonant transformer-type X-ray apparatus. Instead of peppering target to produce X-rays, electrons shoot into the open air through a small metal window. In most cases not more than 15 seconds' exposure in electron stream is needed to sterilize or toughen suitable materials. Commercial development of the process is underway.

(Information courtesy of X-ray Dept. General Electric Co., Dept. CP, 4855 Electric Ave., Milwaukee 14, Wisconsin.)

Change to paddle wheel fans improves vapor collection . . .

mist and sludge generated by wet machine finishing operations eliminated

Vapor collectors using multiple blade fans were used with Pratt and Whitney airfoil blade grinders to control mists caused by use of oil coolant on abrasive belts. While the fine mist appeared to be easily controlled, a by-product in form of heavy sludge was created by combination of oil, abrasive knocked off belting, plus lint and stringy material from belting itself. Sludge would not only load up and block off connecting lines to collectors but load up blades of fans as well.

Paddle wheel fans were tested and not only successfully resisted tendency of sludge-like material to load up, but also increased total cfm capacity of collector. Baffles were installed in front of each outlet connection which intercepted direct "throw" of sludge and thus eliminated necessity for frequent cleaning of flexible fabric hose connections between machine and vapor collector. Baffles do not interfere in any way with collection of the fine mists.

(Dustkop Vapor Collectors with paddle wheel fan are produced by Agat-Detroit Co., Dept. CP, Ann Arbor, Mich. . . or for more information about manufacturer's product, reader may simply check CP 6254 on handy Reader Service slip located between pages two and three.)

Polyamide Resin Is Versatile Adhesive ☆☆☆☆ General Mills Aliphats Boost Ore Output ☆☆☆☆ Wheaties to Chemicals!

The All-Around Utility of General Mills Polyamide Resins is so well recognized among adhesive formulators that this material is now a standard commodity in the field.

General Mills Polyamide Resins may be applied as heat-seal adhesive, by either hot melt or solvent solution technique. They bond at moderate temperatures. For example, Polyamide Resin 95 bonds at 80 to 100° C. This means that heat won't damage the material on which it's used. Important adhesive uses of Polyamide Resins include: paper labels, foil, cellophane, packaging (both flexible and rigid), shoes, book and magazine covers, and many others.

One of the newest uses of Polyamide Resins is for metal to metal bonds. Polyamide Resins 90 and 100 are used to join metal parts where high peel strength is needed and extreme rigidity is not important. This bond is highly resistant to oils, commercial anti-freeze, wax emulsions, detergents, and many other commercial products.

Among their many other desirable characteristics, Polyamide Resins are non-blocking, thermoplastic, have good heat and color stability. They are easily applied because they have sharp and relatively low melting points. Naturally they also set up quickly.

Polyamide Resins 93 and 94 are designed for solvent coatings. They have excellent heat-sealing and moisture-resistance properties. They are frequently used for hot melt application where solvents are undesirable. Polyamide Resin 95 is specially compounded to give protective coatings with superior anti-blocking properties and resistance to moisture vapor. All Polyamide Resins may be modified by blending to give either a soft, pliable material or one that is hard and tough.

For additional information on General Mills Polyamide Resins, please mail the coupon below.

☆☆☆☆

Mineral Ore Output by froth flotation is on the increase, and General Mills assisted in this development with Aliphats specifically designed for ore flotation. These Aliphats are inexpensive fatty acids.

Aliphat 44-E, for example, is a special mixture primarily composed of oleic and linoleic acids. As a result, it has an excellent record of performance as a direct replacement for the more expensive oleic acid in flotation of fluorspar. Aliphat 44-E has good interface characteristics, resulting in excellent concentrate purity, good recovery, and decreased middlings load. Another General Mills Aliphat, 44-A, gives top results in beneficiation of barite and spodumene.

In addition to these and other fatty acids, General Mills offers a line of fatty nitrogen compounds, too. These

compounds are of benefit in flotation of phosphate, potash, feldspar, and (potentially) iron ore. For technical information on General Mills Aliphats or fatty nitrogen compounds, just mail the coupon below.

☆☆☆☆

What's General Mills Doing in the chemical business? That question is sometimes asked by those who know General Mills best for its Wheaties, Bisquick, Gold Medal Flour, or Betty Crocker Cake Mixes.

Here's the answer! These food products all came from agricultural raw materials—original source of the bulk of General Mills industrial chemicals. The General Mills Chemical Division . . . now an outstanding industrial chemical source . . . was the natural outgrowth of agricultural research and its application to the chemical field.

The research facilities and personnel that developed those food products . . . the quality controls that made them reliable . . . and the constant improvements that made them famous—all were suited to the chemical field.

So, General Mills brought to chemicals the outstanding organization trained in the field of agricultural resources—plus the high standards and product-control methods it pioneered in foods and feeds. This organization is now dedicated to the production of top-quality oils, fatty acids, and organic chemical derivatives for you.

If you would like information on any of the General Mills industrial chemicals, please mail the coupon below.

General Mills

CHEMICAL DIVISION

KANKAKEE, ILLINOIS

Please send me additional technical information for the products checked below.

☐ Fatty Nitrogen Compounds
☐ Polyamide Resins

Fatty Acids:
☐ Aliphat 44-E
☐ Aliphat 44-A

NAME _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

progress thru research

When inquiring check CP 6255 on handy form, pgs. 2-3



Mister, you're surrounded by things containing diatomite, or which were filtered by it. That beer you're delivering owes its brilliance and clarity to diatomite filtration. The paint on your truck has likely been extended with diatomite. Your battery may have diatomite as a filler in the case or separators. And diatomite helped in several ways to produce the oil which lubricates your truck motor.

In any of these cases, mister, it's a better-than-even bet that the diatomite used bore the name DICALITE — because DICALITE is top-quality diatomite, processed for many uses to the highest quality standards ever established. Food processors use DICALITE filteraids to

produce sugar, shortening, salad oils, jellies and other good things on the shelves of that market. DICALITE plays a vital role in producing streptomycin and other antibiotics, vitamins and other pharmaceuticals. The dry-cleaner uses DICALITE products to keep his cleaning solvent clear and active . . . there's DICALITE in the magazine pages on the news stand and in those beer cartons — and perhaps even in the asphalt under your feet and in the concrete of the building.

So varied are the uses of this versatile material, nobody yet knows them all. If you'd like to learn more, let us send you a bulletin on DICALITE filteraids, fillers, insulation, or other aids to industry.

Write to Dicalite
Division, Great Lakes Carbon
Corporation, 614 So. Flower St.,
Los Angeles 17, California

Dependable
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GREAT LAKES
DIATOMACEOUS MATERIALS

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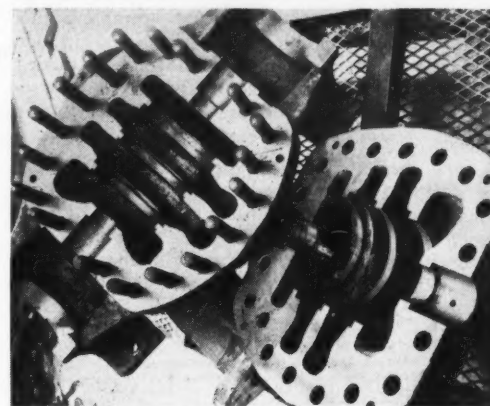
When inquiring check CP 6256 on handy form, pgs. 2-3

IDEAS

No refrigeration required for resin used in impregnation of porous metal castings . . .

can be cleaned from surface by a non-ionic soap, eliminating use of solvents

Resin used in recently developed metal casting impregnation process does not require refrigeration, agitation, or aeration. Other types of impregnants do require refrigeration, increasing viscosity to a point where it interferes with rapid production.

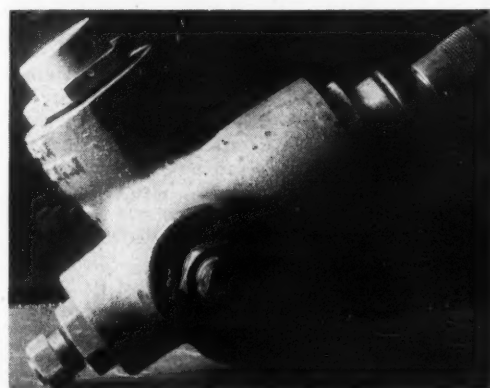


Pump casting (shown above) has been impregnated by recently developed procedure

In addition, viscosity is never constant. With this resin, the viscosity is maintained at the ideal value required for all types of castings — and this viscosity remains constant throughout the impregnating operation.

In the older methods of impregnation, the sealants were washed from the surface with solvents, which also removed some of the material from the pores. The present resin is removed from the surface with a non-ionic soap, eliminating the need for solvents.

Resin is also said to have excellent wetting properties, positive pore penetration being assured at all times. Material is stable with all alloys, including copper-base materials. Cured resin is resistant to a



Fitting being tested for leakage after impregnation

wide range of acids, alkalis, solvents, and other chemicals. It is a good bonding agent and provides corrosion resistance for all metals.

Resin is applied to porous castings by a self-contained unit comprising autoclaves, high-vacuum pump, thermostatically controlled wash tanks, a mechanical surging unit, and a power operated hoist. Exclusive of baking oven, unit occupies less than 40 sq ft of floor surface. Process has been successfully used to impregnate both bronze and stainless steel chemical pump castings. It is also said to be especially effective for magnesium castings.

(Information on Metaseal 19V5 resin and mechanized impregnation system can be obtained from American Metaseal Corp., Dept. CP, 30 E. 60th St., New York 22, N. Y. . . . or for more information check CP 6257 on handy form, pages 2 and 3.)

Small, self-contained source of X-rays may soon be commercial reality . . .

pocket-size unit consists of radioactive material surrounded by heavy metal

Small, self-contained source of X-rays for use in industry may soon be a commercial reality as a result of work in progress at Armour Research Foundation of Illinois Institute of Technology. X-ray source consists of a small quantity of radioactive material surrounded by a layer of some heavy metal.

Radioactive center emits Beta rays, which drive through surrounding metal, being changed to X-rays in process by deflection from path. Radiation can be turned off by replacing metal shell with plastic that absorbs rays.

Elimination of heavy X-ray equipment formerly needed for inspecting parts and other uses should be of considerable value.

(Courtesy of Illinois Institute of Technology, Dept. CP, 35 W. 33rd St., Chicago 16, Ill.)

Cat supplement gives info on amperometric titration

Illustrated 32-page publication is divided into two sections. Section one is 16-page comprehensive presentation on Technique of Amperometric Titration. It gives procedure, apparatus set-ups, and 5 pages of tables on determinations on metals, anions, organic compounds and dissolved gases. Extensive bibliography is included.

Section two is a supplement to the company's catalog and gives new items, reinstated items, and changes in specifications of laboratory apparatus.

Number 16 of "Scientific Apparatus and Methods" is available from E. H. Sargent and Co., Dept. CP, 4647 W. Foster Ave., Chicago 30, Ill. When inquiring specify CP 6258, pages 2 and 3.

Look for These 7 Signs of GOOD PUMP DESIGN

CAST SHAFT SLEEVES, not commercial tubing, save the shaft from wear. Sleeves extend through the stuffing box and seal at the impeller hub.

HEAVY HORIZONTAL SPLIT CAST-IRON CASING construction with suction and discharge nozzles located in lower half for easy inspection without disturbing piping.

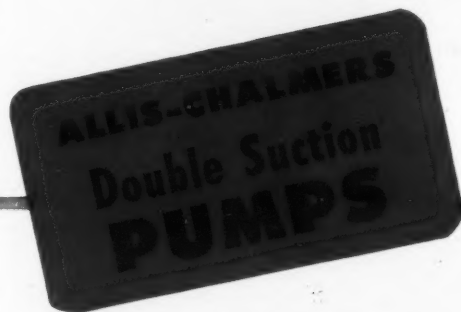
COUPLINGS have Magic-Grip quick change bushings for pump and drive shaft. Pin and rubber bushing type usually used. Removal for maintenance is easy.

BALL BEARINGS may be furnished for either oil or grease lubrication. Sleeve bearings also available in larger sizes.

GENEROUS STUFFING BOX LENGTH contains sufficient packing to keep stuffing box maintenance low. Provision is made for sealing water connections or for grease seal if these are required.

DOUBLE SUCTION ENCLOSED IMPELLER is precision turned and carefully balanced to assure vibrationless operation and close wearing ring clearance. Water passages are hand finished to a smooth surface.

STANDARD AND SPECIAL MATERIALS are available for many types of service where government regulations permit. Iron, bronze, stainless steel and combinations of these materials handle both alkaline and acid solutions. Standard sizes carried in stock range from 10 to 7000 gpm with heads as high as 475 feet.



THESE DESIGN AND CONSTRUCTION features of Allis-Chalmers double suction pumps assure long pump life and low maintenance costs. Every A-C double suction pump is carefully tested on the most modern pump testing equipment in the industry.

Complete Pumping Unit

Allis-Chalmers can furnish the complete pumping unit — pump, motor, control and drive — all of coordinated design and manufacture.

Whatever your pumping problem, call your nearby Allis-Chalmers Authorized Distributor or District Office. Or write for Bulletin 08B6146. Allis-Chalmers, Milwaukee 1, Wisconsin.

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Texrope, Magic-Grip, and Vari-Pitch are Allis-Chalmers trademarks.

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MOTORS — ½ to 25,000 hp and up. All types.

CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



TEXROPE V-belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

When inquiring check CP 6259 on handy form, pgs. 2-3

BIG 4 in "chemi-fats"

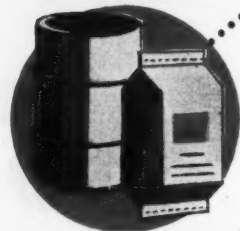
1. Adol fatty alcohols
2. Hydrofol glycerides
3. Hydrofol fatty acids
4. ADM sperm oil products

available for immediate shipment:



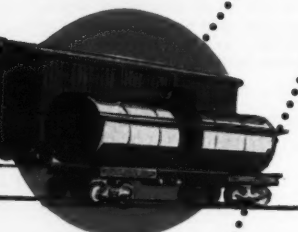
in working samples

Any standard or special "Chemi-fat" can be furnished for research and experimental purposes.



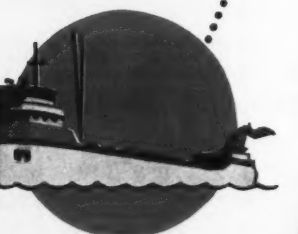
in bags or drums

Flaked and beaded fats are supplied in 50-lb. multi-wall paper bags. Liquid chemicals in 400-lb. steel drums.



in carloads

Carloads, i.e., tank car, and less-tank-car shipments made promptly from eight conveniently located warehouses.



in shiploads

Marine shipments to foreign and domestic ports can be arranged for high-volume users.



write for free wall chart of ADM chemicals.

Easy-to-read tables give composition and specifications of 40 ADM "chemi-fats". (Chart is 17" x 27")



Other ADM Products:

Lined Oil, Soybean Oil, Fish Oil, Paint Vehicles, Foundry Binders, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa Meal, Chlorophyll, Livestock and Poultry Feeds

ARCHER • DANIELS • MIDLAND COMPANY
Chemical Products Division • 2191 West 110th St. • Cleveland 2, Ohio

When inquiring check CP 6260 on handy form, pgs. 2-3

IDEAS

Market package-type fat splitter plant

Package-type, continuous fat splitting plant is now available for smaller processors.

Using Colgate-Emery process, plant has rated capacity of 500 lb/hr. Developed as economical, low capacity unit, it is reported to give 98% yields at low operating costs, which previously were available only in larger continuous units. Design features ease of erection and simplicity of operation. Fat-splitting column is 65 ft high, is unhoisted, and requires ground space of five sq ft. Accessories require building space 10 by 15 ft and 16 ft high.

(Product of Chemical Plant Division, Blaw-Knox Company, Dept. CP, 2042 Farmers Bank Bldg., Pittsburgh 30, Pa. . . . check CP 6261, pages 2 and 3.)

Make furfural from waste pulping liquor

Now in operation by Brown Company, Berlin, New Hampshire, is pilot plant producing furfural from waste pulping liquor. Purposes are to reduce amount of stream pollution resulting from pulping operations, and to make maximum utilization of wood.

Plant is located in pulp mill adjacent to sources of raw material and power. Laboratory work performed on process indicated that it may be a practical method for disposing spent sulfite liquor. If pilot plant confirms technical feasibility, company hopes to proceed with full scale furfural plant.

(Information courtesy of Brown Co., Dept. CP, Berlin, N. H.)

Considers characteristics of reproduction materials

Basic information on reproduction materials for use in engineering, industrial, and other fields is provided in 22-page illustrated booklet.

Bul "Kodagraph Reproduction Materials" is issued by Industrial Photographic Div. of Eastman Kodak Co., Dept. CP, Rochester 4, N. Y. Specify CP 6262, pages 2 and 3.

PICCOLASTIC

SYNTHETIC RESIN

A GREAT GROUP OF RESINS
with outstanding properties

VARIETY—Available in a wide range of melting points, molecular weights, solvencies and other properties.

PERFORMANCE—Piccolastic synthetic resins are stable—styrene based, readily soluble and unsaponifiable.

RESISTANCE—Both alkaline and acid resistant.

ACCESSIBILITY—Used in manufacture of coating compositions, adhesives, laminants, impregnants, molded products, printing inks and other products.

Write for complete information
on various grades and samples
for examination and testing



PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
CLAIRTON, PA.

Plants at Clairton, Pa.; West Elizabeth, Pa., and Chester, Pa.

Sales Offices in the New York, Chicago, Philadelphia and Pittsburgh districts

When inquiring check CP 6263 on handy form, pgs. 2-3

New Vehicle

Turns Liquid Chemicals
Into Free-Flowing Solids!

TERRA-LITE®
VERMICULITE

— a lightweight, highly absorbent, mineral that makes it the ideal carrier for chemicals.

- ★ Free-flowing even when mixed with high percentage of chemicals.
- ★ Over 27,000,000 particles per lb. (28/65 mesh.)
- ★ Quick service from 39 plants.
- ★ Dust free.

Write For descriptive booklet and working samples.

ZONOLITE COMPANY

Dept. CP-24

135 S. LaSalle St., Chicago 3, Ill.

When inquiring check CP 6264 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Method aids in pipeline design for non-Newtonian fluids

As outlined in a technical paper presented recently before a meeting of the American Institute of Chemical Engineers, a method is available for predicting the pipeline pressure drop requirements for the laminar flow of non-Newtonian fluids. This method may be used for predicting, from laboratory data alone, the effect of changes in operating variables such as flow rate, temperature and solids content of the fluid and diameter of the pipeline. When no data are available, method may be used as a basis for the design of a model on which a single determination will provide the desired information about the full-scale prototype.

The method has been shown to be applicable to all fluids except those whose rheological characteristics change with time (thixotropic and rheopectic) and dilatant slurries, on which no data were available. The generality and utility of this method has been shown by correlation of data on 5 plastic and pseudo-plastic fluids in pipes ranging in diameter from 1/2 to 3"; average linear velocities of the fluids studied varied from 0.27 to 7.0 ft per sec and apparent Reynolds' numbers varied from 0.43 to 1910. Fluid properties were determined with three different viscometers.

(Abstract of a paper entitled "Pipeline Design for Non-Newtonian Fluids" presented before a recent meeting of the American Institute of Chemical Engineers.)

Phosphoric-base pickling acid exhibits low corrosiveness, sludge is readily removed

Producing little corrosive effect and no harmful fumes, phosphoric-base acid is being used for continuous pickling of hot-rolled steel (including stainless) and batch processing of iron castings and parts. Insoluble ferrous and ferric phosphates are precipitated as sludge by pH adjustment of pickling bath. Space must be allowed for sludge accumulation on tank bottom. Otherwise, precipitate buildup would interfere with material being pickled. Heavy sludge deposit can also retard direct heating through tank bottom. However, continuous sludge removal can be effected by using a centrifuge.

Acid tanks should be made from 316 stainless, or else lined with wood or acid-resistant tile. Rinse and neutralizing tanks can be of normal steel for most operations.

Life of pickling solutions can be maintained indefinitely if they are kept at original acidity (pH = 1.0), and sludge accumulation is not excessive. Manufacturer states that no special plant is required for disposal of the iron phosphate.

(The "Ferr-O-Niel" Pickling Process is a development of Nielco Laboratories, Department CP, Post Office Box 4703, Detroit 19, Michigan . . . or reader may simply check CP 6265 on handy Reader Service slip located between pages 2 and 3, for more information.)

how to SOLVE your LOW-CAPACITY FLOW CONTROL problems

Q. What are Controlled Volume Pumps?

A. Reciprocating, positive displacement, flow control instruments, driven by air or electric motor. They pump with a repetitive accuracy of plus or minus one percent. Capacities from 3 milliliters per hour to 45 gallons per minute. . . Pressures to 25,000 pounds per square inch. Capacity adjustment—manual . . . or automatic response to a control signal from an electronic or pneumatic control instrument.

Q. Where are Controlled Volume Pumps Used?

A. Across all industry . . . for flow control and pumping of precise quantities of chemicals and slurries . . . for accurate ratioing of chemical streams . . . and for automatic control of a process variable, such as pH, using these pumps as final control elements.

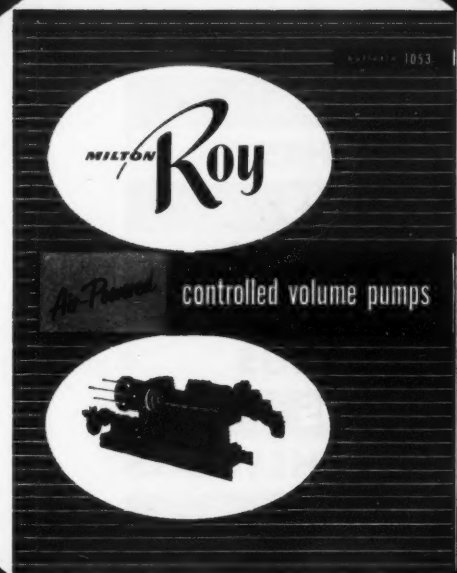
Q. What is the Milton Roy Exclusive Step-Valve Liquid End?

A. A patented step-valve liquid end with individually inspectable ball checks (to facilitate cleaning). Sloping passages purge entrained air, assuring high repetitive volumetric efficiency.

Engineering Representatives in the
United States, Canada, Mexico, Europe,
Asia, South America and Africa

This new 16-page Bulletin 1053 on Air-Powered Controlled Volume Pumps is your guide to precise flow rate control of low-capacity chemical and slurry streams. It contains a graphic presentation of pump operating principles; capacity-pressure and air-consumption tables; examples of complete Milton Roy engineered chemical feed systems, using these instruments.

Solve your low-capacity flow control problems. Send for your copy of Bulletin 1053, now.



CONTROLLED VOLUME PUMPS ARE FLOW CONTROL INSTRUMENTS

Roy

Manufacturing Engineers, MAID LANE • PHILA. 18, PA.
CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

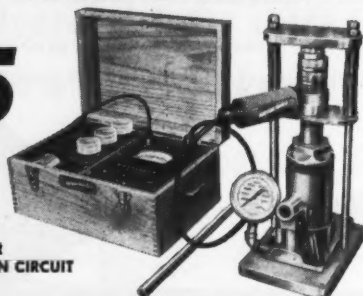
When inquiring check CP 6266 on handy form, pgs. 2-3

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R. F. POWER
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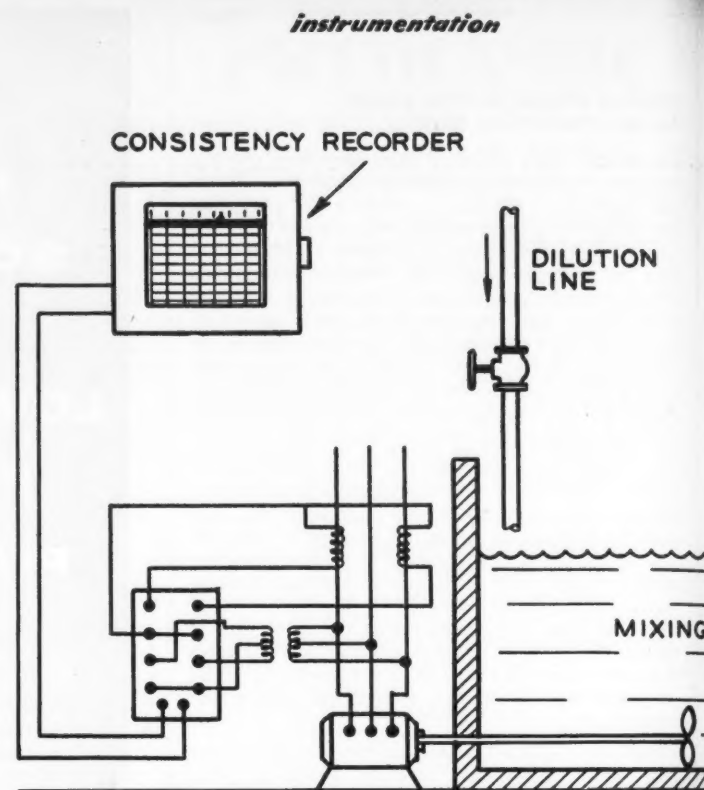
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CITY _____ STATE _____

When inquiring check CP 6267 on handy form, pgs. 2-3

52

GRAB SAMPLES ARE OUT!



Schematic shows consistency recording section (left)
and temperature control section (right)

Paste-maker's problems yield to continuous recording

Recorder shows load on 50 hp mixer
motor — producing a far more uniform
product than spot viscosity tests could

Problem: While nothing seems less complicated than mixing paste for floor and wall coverings, one large manufacturer found that rejects were frequent and batches varied considerably in their properties. Process involved dispersal of a mineral filler in an aqueous binder solution.

Since raw materials were mixed in an open tank, operator took occasional grab samples and sent them to the lab for viscosity checks. However, paste in the heated 1200-gallon tank bodied rapidly and reports from the lab were often too late to be of any value. It was found that unless initial stages of mixing were followed more closely and bodying was strictly controlled, paste did not meet specifications.

Solution: When viscosity reaches a certain point in mixing operation, operator admits water causing a sharp dip in consistency. He continues to admit water in smaller amounts as needed until paste no longer shows a tendency to continue



Operator can tell when water should be added and
when batch is finished by chart record

CHEMICAL PROCESSING

TEMPERATURE
CONTROL

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FEBRUARY

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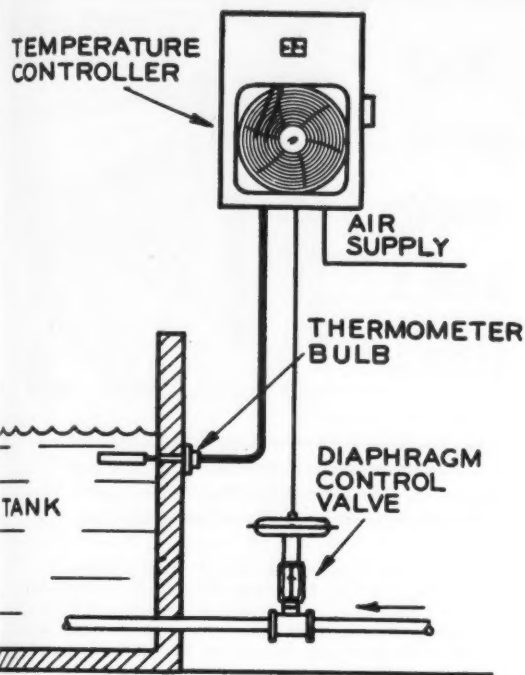
TANK

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bodying. At this stage, heat is removed and the product run off for packaging.

In order to sense both the rapid rise in viscosity at the early crucial stage and gradual changes in viscosity which mark finishing of the product, continuous recording seemed to be indicated. In effect, this was accomplished by measuring motor

(Continued on page 55)

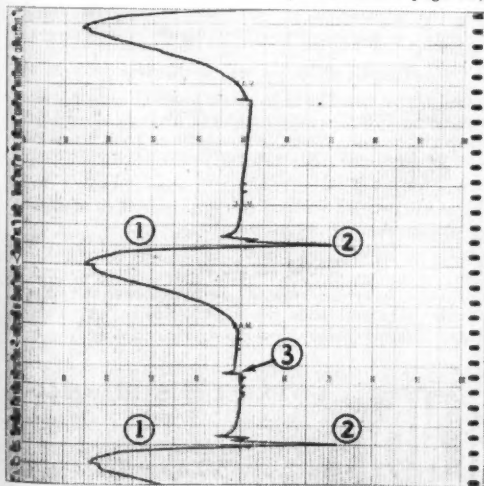


Chart shows 1) viscosity of a new batch rapidly rising, 2) addition of water to reduce viscosity again, when operator notes proper viscosity value and 3) small further additions of water which he sometimes makes to continue to check bodying in paste

STEAM...is only as good as you use it!

Use steam the right way to
reduce production costs, improve
product quality and output—

When production slow-downs, high costs, and poor product quality occur, don't always blame the process equipment—often the fault is in the way steam is used.

For example, waterlogging caused by improper trapping or poor steam circulation, seriously affects heat transfer, reduces output, and creates production bottlenecks. Improper air venting does the same. Poor temperature control can lower product quality, cause rejects and further raise production costs.

If your plant is suffering from any of these production handicaps, Sarco can help you.

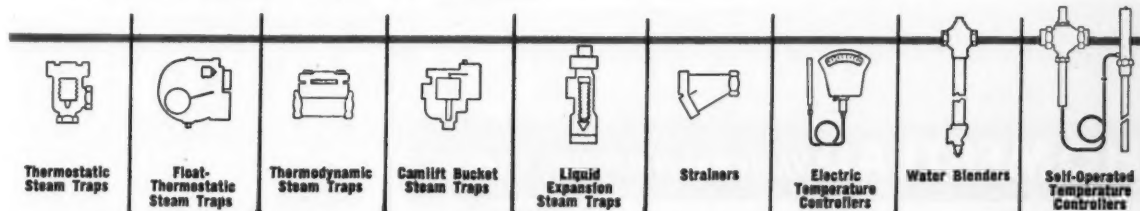
Plant after plant has benefited from Sarco's experience in the process industries. The complete line of Sarco steam traps and temperature controls enables Sarco engineers to offer impartial, expert recommendations on how to make steam work best in your plant.

Why not call on Sarco for engineering recommendations next time you need help. For case histories describing how other plants in your field solved similar problems, write today to Sarco Company, Inc., Empire State Building, New York 1, N.Y.

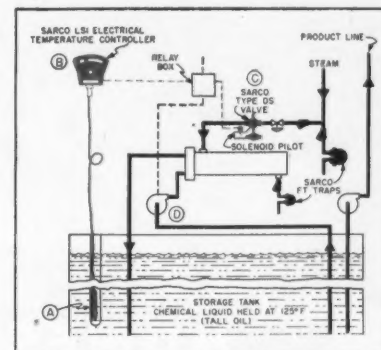
SARCO

improves product quality and output

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS



When inquiring check CP 6268 on handy form, pgs. 2-3



Making Tall Oil Behave

A nationally-known detergent manufacturer uses tall oil in one of its products. Stored in tanks and pumped to vats on upper floors, the liquid must be kept at 125°F to avoid damage to pumps and heat exchanger.

Until recently, the liquid was heated by an exchanger using hand control of the steam valve. This proved costly since it was almost impossible to keep the liquid at the desired temperature.

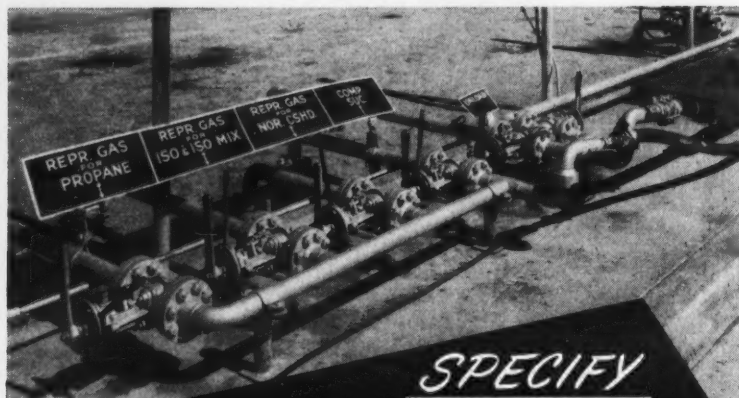
Sarco suggested the installation above. The Electric Temperature Controller (B) opens steam valve (C) and simultaneously starts pump (D) whenever temperature drops below 125°F.

Result: shutdowns eliminated, product quality improved... another example of how Sarco engineering know-how helped solve a temperature control problem by proper use of steam. Write for Case History 119.

SARCO ELECTRIC TEMPERATURE CONTROLLER holds liquids to $\pm 1^\circ\text{F}$. Temperature setting may be easily changed by turning one small knob. Write for Bulletin 1025-A.



for dependable, trouble-free control
"of hard-to-hold" fluids



SPECIFY HOMESTEAD Lever-Seald VALVES

they provide sure shut-off . . .

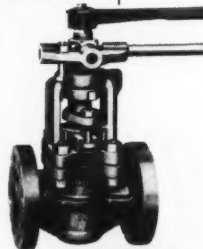
ARE STICK PROOF . . . OPERATE INSTANTLY

A positive, drop-tight seal and instant, stick-proof operation under all fluid, temperature or pressure conditions, is assured by the exclusive, built-in, Homestead Lever-Seald mechanism. This powerful lever-and-screw device not only presses the valve's tapered plug firmly into its seat to form a drop-tight seal, but also provides a positive means of relieving seating pressure just enough to overcome friction and permit easy operation. And because all operating parts and valve seating surfaces are fully protected in both the open and closed positions from the corrosive or erosive effects of line fluids, long, dependable, trouble-free service is doubly assured.

If "hard-to-handle" fluids are your problem, specify Homestead Lever-Seald Valves for your next installation or as replacements. You'll be glad you did.

We make them in metals and alloys to specification in sizes 1½" to 12", for pressures from vacuum to 1500 lbs., and for temperatures from 40° below zero to 1100°F. Dry seat, or pressure gun lubricated optional.

For complete details and copy of VALVE REFERENCE BOOK No. 39-3, MAIL THE COUPON TODAY.



Without obligation, send me Catalog 39-3 covering Homestead Lever-Seald Valves.

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ADDRESS _____
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HOMESTEAD VALVE MANUFACTURING COMPANY

P. O. Box 140

Coraopolis, Pa.

When inquiring check CP 6269 on handy form, pgs. 2-3

INSTRUMENTATION

**Two temp ranges
in same meter
featured . . .**

0 to 2400 or 3000°F and 0
to 2000 or 3000°F standard

Uses: Indicating millivolt meter pyrometers cover usual temperature range.

Features: Each instrument has two possible ranges.

Description: Single-point, double-range indicating millivolt-meter pyrometer is now in production. Dual temperature indicator is stable in operation and relatively free from effects of vibration and ambient temperature. Servicing is reported to be comparatively easy for a millivoltmeter instrument.

Standard ranges for dual temperature indicator are 0 to 2400 and 0 to 3000°F on one instrument, 0 to 2000 and 0 to 3000°F on a second instrument. Other combinations can be supplied.

Pyrometer is housed in die-cast aluminum case with two compartments. Separate covers protect plug-in galvanometer unit and terminal box. Galvanometer is totally enclosed to prevent dust and foreign particles from interfering with calibration.

Galvanometer is designed for each combination of ranges so that spring constants, bimetallic spirals, and span resisting adjusters control range. Two such resistors are provided, each connected to form separate measuring circuit for one range. Instrument employs thermocouples.

(Double-range Pyrometer is a product of Industrial Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. . . . or check CP 6270, pgs. 2 & 3.)

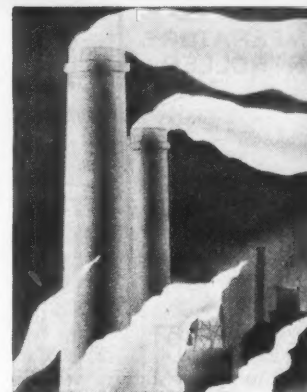
Shows methods of using sight-glass gages

Four-page publication is devoted to various sight-glass gages and their proper use.

Unit No. 200 is issued by Jerguson Gage & Valve Co., Dept. CP, 87 Fellsway, Somerville 45, Mass. When inquiring specify CP 6271, pages 2 and 3.

AIR POLLUTION

**What
happens to
smoke
from a
stack?**



How the applied knowledge of windspeed and direction, temperature and humidity can help minimize air pollution problems without costly modification of present equipment.

To find out what happens to smoke from a stack . . . you first build a tower, let's say, 400 feet into the air. Inside that tower put up a smoke stack some 350 feet high. Install Bendix-Friez Recording Aerovanes at regular intervals from top to bottom. Six or seven in all in the stack.

Then let oil fog smoke escape from ports in the stack near the recording Aerovanes. One day release the smoke from high in the stack . . . then low . . . then from the middle, etc. Next day repeat.

Smoke reaction

Study the smoke reaction day in and day out, from sunup to sundown. Graph the recordings of windspeed and direction and the temperatures each time. Chart the smoke dispersion. Keep this up for some four and a fraction years.

If you do this . . . you'll come up with some solid answers for forecasting smoke behaviour under almost all kinds of turbulence and temperature conditions.

Applicable to all industry

Actually, you don't have to go through all this. Meteorologists using Friez equipment have already done much of the work for you. They've established that basic patterns of smoke behaviour can be determined.

At Bendix-Friez we offer you the experience of those who've made use of Bendix-Friez equipment to eliminate their own problem of pollution.

How to do it

For further information, and case histories that apply to your plant and your problem, write to "Air Pollution" Bendix-Friez, Towson 4, Maryland.



FRIEZ INSTRUMENT
Division of



1450 Taylor Ave., Balto. 4, Md.

EXPORT SALES
Bendix International Division
205 E. 42nd St., New York 17, N.Y. U.S.A.

When inquiring check CP 6272 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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(Continued from page 53)

load. A transducer installed in the lines of the 50-hp (AC) motor now reflects loading to an electronic potentiometric recorder.

Changes in power needed to drive tank's paddle-wheel agitator are picked up as millivolt signals. Since motor is operating at 25 cycles per second while recorder is powered by 60 cycle AC, a special inverter or "chopper" is used. This and a filter network which is a standard part of the Dynamaster recorder discriminate against stray potentials by a ratio of 2000:1.

Results: Since operator can now see exactly where the process stands at any time — and more, where it is going — he can maintain control. This has been reflected in the record for the past several months while system has been in operation. There have been virtually no rejects. Uniformity from batch to batch is no longer a problem. Actually, records of previous batches have made it possible for operators to foresee what treatment is needed. And, shortened batch cycles have increased production considerably.

(Thermoverter Transducer and Dynamaster Recorders (both registered trademarks) are products of The Bristol Co., Dept. CP, Waterbury 20, Conn. . . . check CP 6273 on handy form, pages 2 & 3.)

Robotization, automation designs for volumetric and level work

Relay interlock devices are now being used for complex problems of automatic liquid level control, volumetric mixing, batching, pump protection, and other problems. For the most part systems employ conventional probes and relays.

Systems Now Operating

Repeated sequence closing from a series of dosing tanks to a series of reactors. Sequence is carried on automatically.

Prevention of cavitation of pumps by the use of automatic shutoffs at predetermined safe prime levels.

Automatic checks for complete drainage from all lines and valves. This eliminates possibility of valve sticking or line stricture, resulting in incorrect dosage.

Automatic indication of largest batch possible as a function of minimum available quantity of any constituent.

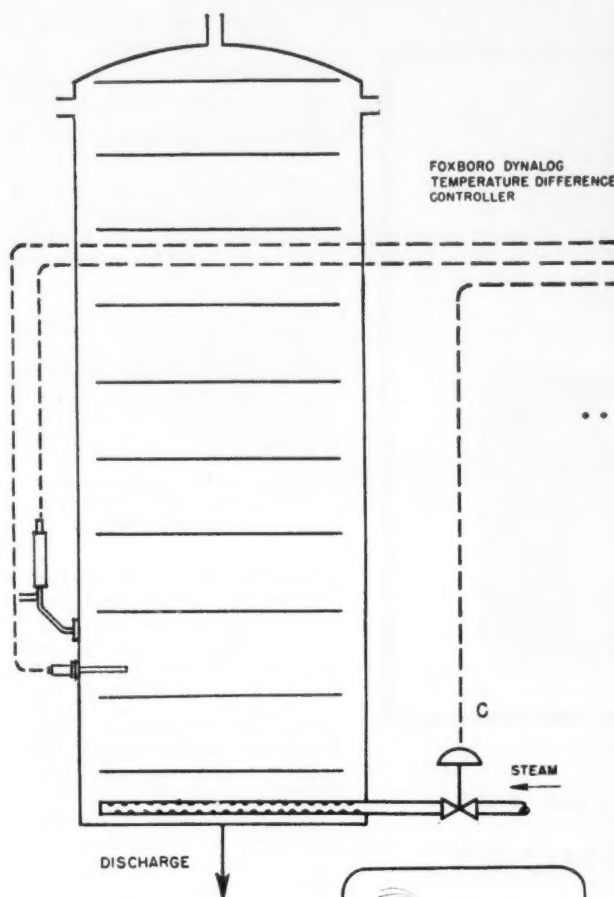
Control of foam height by signalling in anti-foam agents, or (automatically) changing mixing speeds.

Sequence batching in a single tank, where several constituents are added, each at a definite level.

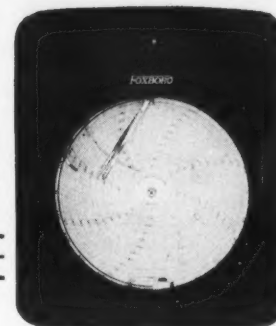
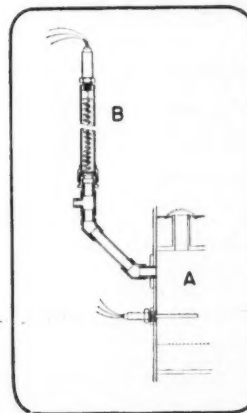
Automatic batching of solids by measuring level changes due to liquid displacement.

(Design notes, schematics, and theory are provided in prepared note form by Instruments Div., Techniflex Corp., Dept. CP, 55 Jersey Ave., Port Jervis, N. Y. . . . or for more information check CP 6274 on handy form, pages 2 and 3.)

Why bet your "bottoms" dollars?



Temperature of vapor mixture over lower tray detected by Dynatherm Resistance Thermometer (A) varies with changes in solvent content. Dynalog Controller compares this temperature with that of saturated steam (B) at same pressure . . . regulates steam input (C) to hold solvent loss in bottoms to a minimum.



...get maximum solvent recovery through Foxboro Control

THERE'S NO NEED TO RISK loss of valuable solvent or possible river pollution through stripper column discharge. With a Dynalog Temperature Difference Controller you can always be certain of highest extraction efficiency.

This highly sensitive Controller automatically measures volatile content of stripper bottoms to within 0.02% by comparing temperature of mixed vapors in lower column with saturated steam temperature at same pressure. Then, on the basis of a pre-set temperature difference value, it regulates flow of sparging steam or column input to maintain proper balance.

For measurement and control of any steam extraction process the Foxboro Temperature Difference Method provides maximum accuracy with minimum maintenance. It's simple to install and will quickly pay for itself in greater yields. Write for complete information.

THE FOXBORO COMPANY, 812 NEPONSET AVE., FOXBORO, MASS., U. S. A.

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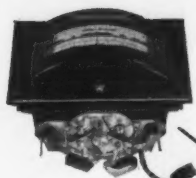
DYNALOG ELECTRONIC CONTROL

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

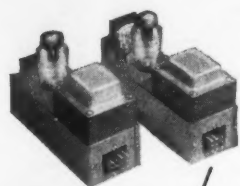
When inquiring check CP 6275 on handy form, pgs 2-3



Wheelco Recorder-Controllers



Simple control mechanism... easily adjusted. Available for two position multi-position proportional input, automatic positioning, proportioning position control systems.



Simple drawer-type plug-in chassis.



Wheelco Capacilog — for measurement, indication, control and permanent record of process variables.

...have PLUS features for ACCURACY and ECONOMY!

• Here's a sensitive instrument, with a miser's touch on maintenance. Electronically operated, the Capacilog combines precise measurement, indication, control and permanent record of temperatures, speed, static strain loads, a-c d-c voltage and amperage with dependable, low-cost operation. *Low cost* because plug-in assemblies simplify and speed adjustments. All parts are easy to check and inspect... no complicated components... no slidewires or standard cells. Yet, Capacilog accuracy is "tops." With the "electronic link" between measurement and control, slightest movement of the indicator assures *instantaneous response* for precise recording or controlling. Write for details, Bulletin C2-2.

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INSTRUMENTATION

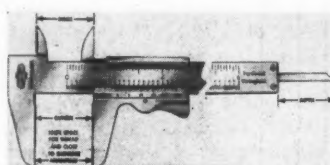
Reads thousandths, or fractions...

metric scale also included in width-depth caliper

Uses: Universal vernier caliper measures inside, outside, or depth.

Features: Stainless steel replaces chrome steel as material of construction.

Description: Caliper's vernier has 25 lines covering 49 graduations of scale. This is more than



Inside, outside and depth positions can be seen in this "condensed" view of caliper

double the size of manufacturer's former type which covered only 24 lines of the scale and $\frac{3}{8}$ of an inch. Larger vernier not only permits easier and more accurate readings, but eliminates eyestrain.

New slide construction employs hardened self-lubricating phosphor bronze spring gib. Gib is machined and fitted into narrow upper side of slide. Two adjusting screws are provided for taking up wear and assuring squareness of measuring jaws.

Three scales and verniers read to one thousandths of an inch on lower front, $\frac{1}{128}$ " and fractions on upper front and to a tenth of a millimeter on the back.

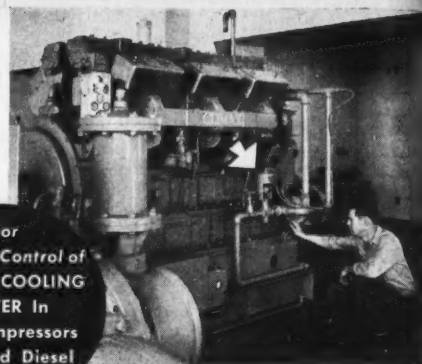
(Vernier caliper is manufactured by George Scherr Co., Inc., Dept. CP, 200 Lafayette Street, New York 12, N. Y. . . . or check CP 6277, pages 2 and 3.)

Specifies transducer for pressure

Specifications and photograph form 2-page data sheet completely specifying pressure transducer for pressures as high as 1000 psia.

Data sheet E 53-02 X is issued by Control Engineering Corp., Dept. CP, 560 Providence Highway, Norwood, Mass. Specify CP 6278, pages 2 and 3.

CLIMAX
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EVANSTON
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WATER
WORKS



For
Reliable Control of
JACKET COOLING
WATER In
Air Compressors
Gas and Diesel
Engines

Use POWERS REGULATORS

No. 11 REGULATOR



Self-Operating
Easy to Install

They Improve the Efficiency and Prolong the Life of Air Compressors, Gas and Diesel Engines.

For each compressor or engine there is a "best" temperature for the cooling water. To insure that temperature at all times, regardless of variations in load or seasonal changes in temperature of water supply, install Powers No. 11 automatic regulators. They reduce operating and maintenance cost. Write for Bull. RDIG. (b54)

THE POWERS REGULATOR CO.
Skokie, Ill. • Offices in over 50 Cities

Over 60 Years of Automatic Temperature and Humidity Control

When inquiring check CP 6279 on handy form, pgs. 2-3



Extremely Versatile — serves as air filter gage, static pressure indicator, draft gage, air velocity meter, etc.

Check these points:—

- Low range accuracy .01" water
- Ranges 0-3" and 0-7" water
- Attractive, rugged molded plastic housing
- Plus, minus or differential readings
- Plunger type oil level adjuster
- Furnished complete — tubing and fittings
- Direct-reading velocity models available
- Low priced

Ask for Bulletin 206

DWYER
Specialized INSTRUMENTS and GAGES

F. W. DWYER MFG. CO. • 335 10 WESTERN AVE. • CHICAGO 12, ILLINOIS

When inquiring check CP 6280 on handy form, pgs. 2-3

CHEMICAL PROCESSING

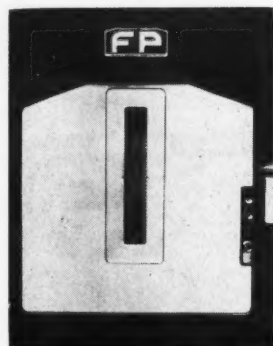
**Total scale length
of 72" employed
in indicator . . .**

moving-tape scale behind hairline provides reading accuracy of 1 part in 2000

Uses: Highly-accurate indicator is intended for use with manufacturer's electronic null-balance system. It may be adapted to other primary instruments.

Features: Seventy-two inch scale is provided for a reading accuracy of better than 1 part in 2000. Scale provisions are $\frac{1}{8}$ " apart.

Description: Scale of electronic indicator is printed on 35 mm film and a maximum range of 5.5 to 1 may be attained. Film scale and positioning servo-mechanism are mounted in case 14 x 18 x 12"—up to four scales may be installed in a single case. In this design, all scales are geared to common receiver with selector switch enabling operator to choose any one of four primary signals.



Employs electronic null-balance

Electronic null-balance system employed incorporates a pair of soft iron armatures. Primary armature is positioned at site of measurement. Indicator can be located as far as 2000 feet away or, with special alignment, at even greater distances. Motion of primary armature unbalances inductance bridge. Phase-sensitive amplifier in indicator rebalances circuit by means of secondary armature. This is reflected in motion of the scale behind a fixed hairline. Fluorescent light behind scale makes readings easy to see several feet away.

Built-in voltage regulator eliminates line fluctuations. Frequency fluctuations of as much as five cycles per second do not affect instrument. Temperature changes at either the indicator or sensing element have little effect.

(Indicator has been developed by Fischer & Porter Co., Dept. CP, 10A Jacksonville Rd., Hatboro, Pa. . . . or check CP 6281 on pages 2 and 3.)

**Details flow meter
for air or gas**

Eight-page booklet gives important data on meter for measuring air, gas, or ratio of flows.

Publication 52-1017-37 is issued by The Hays Corp., Dept CP, Michigan City, Ind. When inquiring specify CP 6282 on handy form, pages 2 and 3.

Most modern electronic print-out, monitoring and computing equipment is designed for DC operation. Until recently it was impractical to integrate these automatic devices with instruments that measure process variables. Consequently, complete process automation was impossible.

Now—the new American Electronic Process Control System provides the major compatibility factor essential to achieve the economic advantages of full process automation: *DC signal transmission.*

The instantaneous DC transmission of process variable measurements permits higher controller gains that result in a new concept of control performance. At the same time, it makes possible the efficient "electric nerve center" so essential to the low-cost operation of the ultra modern plant of today and the standard plant of the future. In short, the American Electronic Process Control System provides the only practical foundation for integration of . . .

1. **AUTOMATIC LOGGING** — the continual listing of operational data in tabulated digital form.
2. **AUTOMATIC MONITORING** — the centralized supervision of all measured criteria for maximum safety and efficiency.
3. **AUTOMATIC COMPUTING** — for precise accounting and engineering analysis at highest speed and lowest cost. Ushers in the fully automatic plant with completely automatic product analysis and control.

In addition to this unique versatility, the American Electronic Process Control System offers *improved quality of control*—tighter control that opens the way for a reduction in the size of process equipment and consequently a lower capital investment for a given through-put. Furthermore—*simplified communication*—with two-wire DC signal transmission lines that are unaffected by induced alternating currents and varying line resistance, the cost and complexity of present systems will be vastly reduced.

When you select process control equipment, basic considerations are performance, initial installed cost, reliability, maintenance, and flexibility. The advanced design and operation of all instruments in the American Electronic Process Control System assure complete satisfaction on every count. Convince yourself. Write for Catalog No. 164.



AMERICAN INDUSTRIAL INSTRUMENTS

A product of **MANNING, MAXWELL & MOORE, INC.** STRATFORD, CONNECTICUT

MAKERS OF 'AMERICAN' INDUSTRIAL INSTRUMENTS, 'HANCOCK' VALVES, 'ASHCROFT' GAUGES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, AIRCRAFT PRODUCTS. BUILDERS OF "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES.

When inquiring check CP 6283 on handy form, pgs. 2-3

NT OF



SERIES LB CONOMOTOR CONTROL VALVES

Great strides have been made in recent years in the fields of instrumentation and automatic control. Most consideration has been given to primary elements, signal transmission and control instruments. But, not much has been done to radically change the final control element.

In the past decade Conoflow has made many contributions to the field of Final Control Elements by the development of pneumatic operators for throttling control service. Today, the Conoflow LB Control Valve represents one of the greatest forward steps in control valve design. We believe it heralds a new era of original thinking in keeping with the modern standards of the completely automatic plant.

The LB Conomotor Control Valve features a new type of pneumatic operator with ability to sense and position, and

with power to operate under sudden load changes. It is mechanically sound with reliable accuracy and stability. It combines a new design of the already approved Conomotor Cylinder operator with a single seated, split body, integral bonnet valve, with an honest-to-goodness renewable seat ring and a fully guided plug and stem assembly. Result . . . the optimum in control and dependability.

Tho designed for the processing and power industries, Cylinder Conomotor Valves are finding application in hundreds of services that demand accurate and trouble-free control of a wide variety of fluid flows. Chances are, this is the all-important final link you have long sought for your control loop. It's worth talking over . . . just write or phone today.

Write for Catalog LB-1, heralding this new "Step Ahead in Cybernetics."

CONOFLOW CORPORATION

Foremost Manufacturers of Final Control Elements

2100 ARCH STREET, PHILADELPHIA 3, PENNSYLVANIA

When inquiring check CP 6284 on handy form, pgs. 2-3

INSTRUMENTATION

Peacetime Sonar — It gages level in tanks . . .

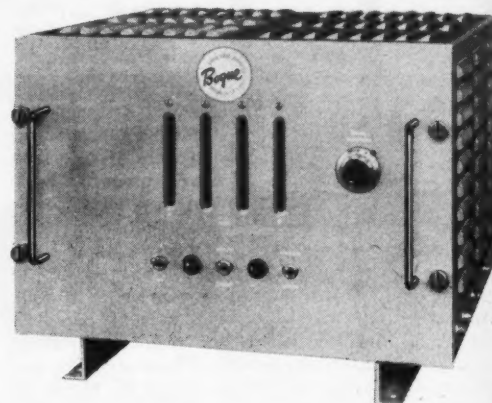
using no moving parts, system is consistently accurate to 0.01 foot despite temp changes, etc

Uses: Accurately indicates liquid level in tanks. Can be used with virtually any liquid. Unit can also be used for finding interface of immiscible liquids.

Features: Employing no moving parts (floats, synchros, etc) gaging unit provides level reading accurate within ± 0.01 foot.

Description: Based on the same principle as Sonar, tank gaging device uses ultrasonic pulses. Pulses are sent out by crystal transducer at base of tank, and bounced from interface or liquid surface. When they return to base of tank they are picked up by transducer and fed to indicating unit.

By comparing time lapse between initial pulse and "echo," indicator is able to give a reading directly in feet. In order to avoid tedious corrections for



Indicating instrument has 4 banks of decimal readouts

changes in density (as might be due to temperature changes) system is calibrated against echo-producing markers at known levels in the tank.

One common indicator can gage any number of transducer-equipped tanks within a radius of 2000 feet. Using a remotely operated rotary coaxial cable for tank-switching, even large tank farms can be gaged from one station. Indicator can also feed level data to digital tape printers when automatic tape inventory or accounting is desirable. Normally, level is shown on banks of decimal readouts.

Tank equipment is explosion-proof. Direct current flow in transducers and coaxial cables is eliminated by design. Alternating current energy levels are too low to ignite gasoline fumes under any possible open or short-circuit conditions.

Tank temperatures up to 130°C (266°F) can be conveniently handled. Special provisions are necessary for measuring minimum levels of one foot or less.

(Ultrasonic Liquid Level instrument is a development of Bogue Electric Mfg. Co., Dept. CP, Paterson 3, N. J. . . . or for more information check CP 6285 on handy form, pages 2 and 3.)

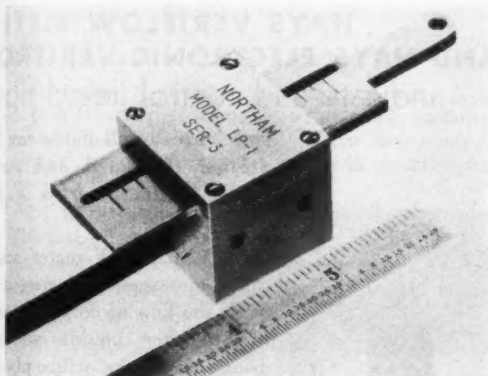
Magnetic reluctance employed in pickup for motion . . .

transducer will operate with AC carrier of 60-10,000 cy, produce signal accurate to 1%

Uses: Produces accurate electrical output corresponding to motion or position in ranges of $\pm 1/2$, ± 1 , and ± 2 inches of travel.

Features: Output signal is accurate to within $\pm 1\%$ of full scale output or better.

Description: Linear motion transducer converts linear motion or position into proportional electrical



Slide controls inductive difference between two coils

cal signal for remote indication or control. Transducer is sensitive to very small movements — in one installation it is measuring solenoid valve stroke within 0.0003 inch over a range of 0.03 inch with the time interval between energization and operation being measured within 1 millisecond.

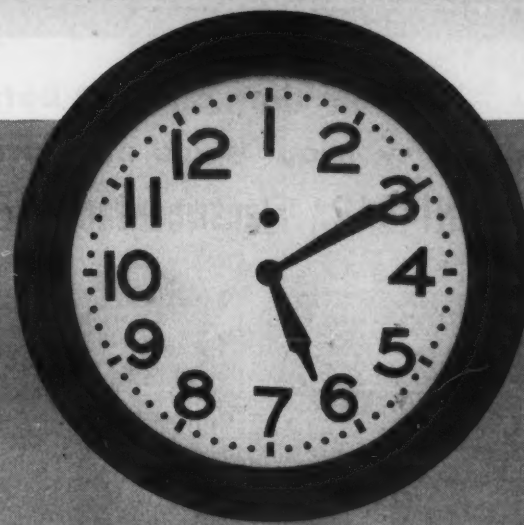
Based on a magnetic reluctance principle, moving slide of transducer controls inductive difference between two coils. Instrument will operate in AC carrier systems where frequency is 60 to 10,000 cy. When operated in a bridge circuit, full scale output is ± 40 mv per volt and maximum excitation is 7 volts.

Small size ($1 1/8$ ") of the machined aluminum case is attained by allowing moving slide to project through case. An alternate model is hermetically sealed for corrosion resistance. Portable control unit and indicating meter for 115 v 60 cy operation can be furnished as an accessory.

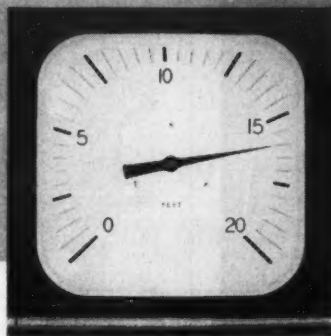
(Model LP-1 linear motion transducer is a product of North American Instruments, Inc., Dept CP, 2420 North Lake Ave., Altadena, Calif. . . . or for more information check CP 6286 on handy form, pages 2 and 3.)

WHAT'S NEW AT BRISTOL . . . HUMAN ENGINEERING

You wouldn't
stand for a
CLOCK like THIS



DOES IT SAY 16 OR 17?



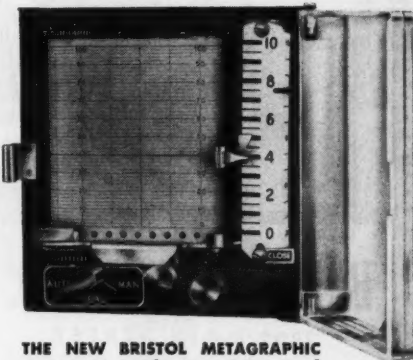
then why put up
with an INSTRUMENT
like THIS?

• Actually, there are thousands of instruments in use that are just as difficult to read as these. Take a look at the instrumentation in your own plant. Chances are you'll find plenty of examples of awkward scale division, unfamiliar zero positions, confusing graduations, not to mention shadows and reflections on scales.

Now Bristol instruments are "HUMAN-ENGINEERED"

Because measurement accuracy involves not only the accuracy of the instrument but the accuracy of the man reading the instrument, we have "human engineered" our charts and scales, making them easy to read, clearly visible at greater distances — so that instrument error becomes the limiting factor in the accuracy of the man-meter system.

Get the whole story of Bristol's human engineering — and how it can help you get accurate measurements, faster and easier. Write us. The Bristol Company, 141 Bristol Road, Waterbury 20, Conn.



THE NEW BRISTOL METAGRAPHIC RECORDER, with its easy-to-read scale, matching fluorescent pointers and shadow-proof door has earned a reputation as the "biggest little instrument in the business". 4.2

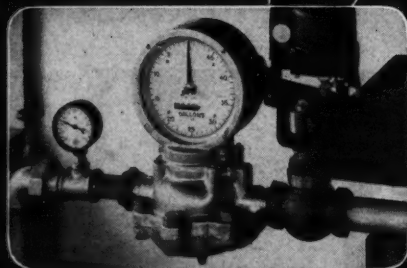
BRISTOL

POINTS THE WAY IN
HUMAN-ENGINEERED INSTRUMENTATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 6287 on handy form, pgs. 2-3

"I save time and get better accuracy in our liquid measurements with NIAGARA Electriccontact METERS"



BUFFALO METER CO.

2892 MAIN STREET
BUFFALO, N. Y.

Gentlemen:

Please send me complete information on the use of economical NIAGARA METERS, based on the data below:

Liquid..... Pressure..... p.s.i.
Temp..... ° F.
Flow rate..... g.p.m.
Maximum batch..... gals.
Name.....
Company.....
Address.....

Commercial liquids CAN be measured quickly, simply and positively. NIAGARA Electriccontact METERS assure accurate measurements through automatic control. The meter actuates a solenoid valve to stop the flow of liquid after delivery of the preset quantity. There's no friction load on the meter. NIAGARA METERS replace obsolete tanks and gauge sticks with a sure method of precise measurement.

Find out just how NIAGARA Electriccontact METERS can give you the most accurate batch measurements—automatically.

Send in the Data Request blank below today.

When inquiring check CP 6288 on handy form, pgs. 2-3

INSTRUMENTATION

1/6 to 1800 rpm
from motor . . .

timing motor delivers 40 oz-inch at 1 rpm

Uses: Specific shaft speeds from 1/6 to 1800 rpm are available in unidirectional and reversing models of timing motor.

Features: Small motor is capable of supplying 40 inch ounces of torque at 1 rpm.

Description: Small motors are of the synchronous variety to operate on supply voltages ranging 6 to 550 volts AC. Construction features oil retaining discs



6 to 550 v AC

which trap oil supply at bearing surfaces and prevent leaks. Cut gears and pinions are used throughout motor assembly and bearing surfaces have been enlarged by 50% over earlier models.

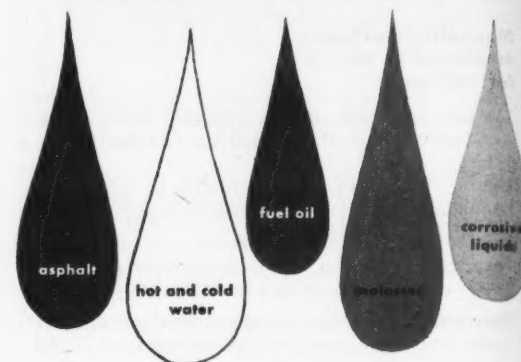
(Model 50 Series Timing Motors are products of Hagen Mfg. Co., Dept. CP, 202-20th Street, Moline, Ill. . . . or check CP 6289, pages 2 and 3.)

Pictures manometers

Illustrated, 2-page bulletin pictures and describes two types of U-tube manometers. Specifications are tabulated.

Bul 371 is issued by King Engineering Corp., Dept. CP, Box 260, Ann Arbor, Mich. When inquiring specify CP 6290, pages 2 and 3.

viscosities unlimited



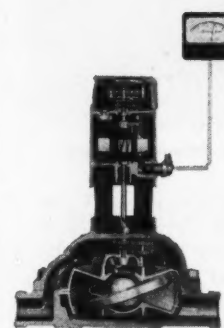
HAYS VERIFLOW METER AND HAYS ELECTRONIC VERITROL indicate and control liquid flow

Now virtually all fluids can be precisely measured and accurately controlled—from a remote position.

Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

Send for Pub. No. 53-766-38.



for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others.

Automatic Combustion Control
Boiler Panels • Hays-Penn Flowmeters
Veriflow Meters and Veritrol
Gas Analyzers • Draft Gages
Combustion Test Sets • CO₂ Records
Electronic Oxygen Recorders
Electronic Flowmeters
Electronic Feed Water Controls
Miniature Remote Indicators

hays

CORPORATION

MICHIGAN CITY 34 INDIANA

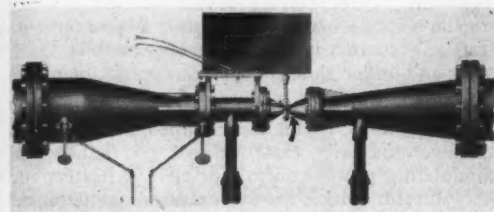
When inquiring check CP 6291 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Governs Venturi throat for metered control of heavy fluids

Uses: Units are designed for controlling flow of sludge or heavily laden liquids. They regulate flows of viscous material even if corrosive.

Features: Part of unit is a flexible rubber section with no pockets or restrictions which could



Arrow near center points to flexible rubber throat of complete Venturi unit

trap particles. Electrical transmission varies opening in this rubber throat and can produce complete cut-off if necessary.

Description: Differential pressure in the Venturi is transmitted to a rate setter which measures and maintains desired flow. When flow tends to change, controller actuates motor-driven clamping device. This adjusts flexible throat area. Overall effect is to measure flow accurately and maintain it over a wide control range.



Cut-away closeup of gear system to position clamp

Should flow suddenly increase, higher differential pressure is transmitted to meter through taps. Flow pen arm of recorder moves to new reading. Contact arm on the pen shaft also drives totalizer. Electrical switches energized in process activate motor in the controller which repositions clamp on the flexible Venturi throat. Constant balance of forces is maintained.

(Sludge Controller is built by Simplex Valve & Meter Co., Dept. CP, 68th & Upland Sts., Philadelphia 42, Pa. . . or for more information check CP 6292 on handy form, pages 2 and 3.)

Provides data for using Pitot tubes

Eight-page bulletin gives technical data and tables which aid in setting up Pitot tubes for use. Typical table shows pipe traverse points for Pitot tube readings.

Tech Bul 51 is issued on letterhead request to The Meriam Instrument Co., Dept. CP, 10920 Madison Ave., Cleveland 2, Ohio.

danger...smog

How Consolidated instrumentation is helping to win the battle against air pollution

Consolidated Titrilogs, both stationary and portable models, serve in the nation's growing battle against air pollution. Titrilogs are used for pin-pointing sources of toxic air contamination and for continuous, automatic recording of varying concentrations of sulfur compounds. Audible warning against dangerous sulfur compounds in traces as low as 0.1 part per million is a feature of these sensitive instruments that are safeguarding growing numbers of industries and communities. Request Titrilog Bulletin CEC-1810B-X1.

Consolidated Analytical Mass Spectrometers also play an important part in the scientific attack on air pollution by positive identification and measurement of pollutants in air samples. This type of smog analysis is being carried out by many research foundations and industrial laboratories in an effort to track down sources and explain the formation of smog. Write for Analytical Mass Spectrometer Bulletin CEC-1800B-X16.



Consolidated Engineering CORPORATION

300 North Sierra Madre Villa, Pasadena 15, California

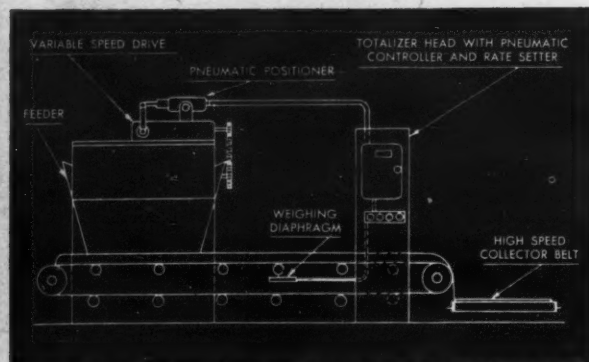
Sales and Service through **CEC INSTRUMENTS, INC.**, a subsidiary with offices in:
Pasadena, Chicago, Dallas, Detroit, New York, Philadelphia, Washington, D. C.

ANALYTICAL
INSTRUMENTS
FOR SCIENCE
AND INDUSTRY

When inquiring check CP 6293 on handy form, pgs. 2-3

WEIGH IT

...on the Go!

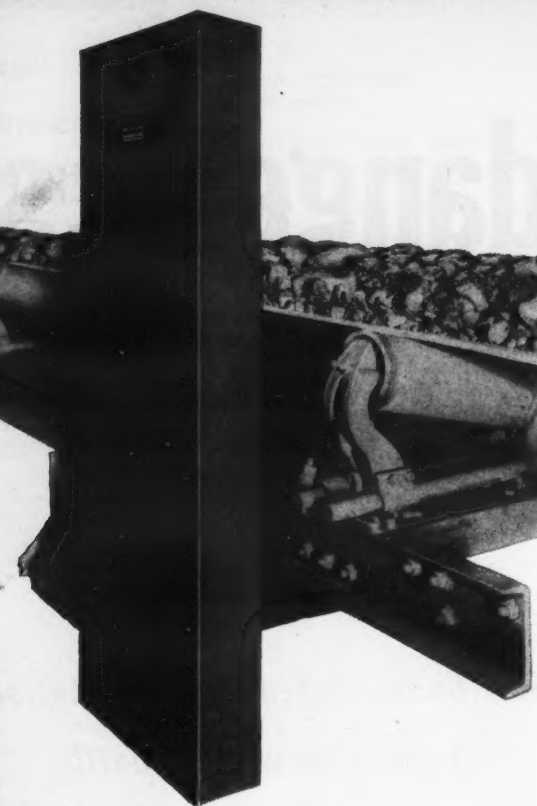


Typical Conveyoflo installation showing Model CFAB-T Conveyoflo Meter controlling flow of tobacco in automatic blending process. Conveyoflo employs pneumatic controller to automatically control feeder output within very narrow tolerances.

Conveyoflo Meters are serving in many other process industries: food, soap, fertilizer, pharmaceutical, steel, paper, glass, heavy chemicals, mining, power. What's your processing problem?

CONVEYOFLO FEATURES

- **ACCURATE** . . . within $\pm 1\%$ of actual weight from maximum to 50% of rated capacity; within 1% from 50% to 25% rate; within 2% from 25% to 10% of meter's rated capacity.
- **COMPACT** . . . weight sensing mechanism completely contained within conveyor structure. No overhead levers. Panel stand only 9" x 18" — may be any height.
- **AUTOMATIC TOTALIZER COMPENSATION** for variations in belt speed and changes in belt weight.
- **RESPONDS ACCURATELY** to rapid load variations.
- **PACES AUXILIARY EQUIPMENT** (feeders, controllers, continuous blending processes, etc.) and operates secondary totalizers, indicators, recorders.



Weigh it with BUILDERS CONVEYOFLO . . . the modern meter for continuous, accurate weighing of bulk material passing over conveyor belts. This precision meter can be equipped with a Controller to maintain any desired preset rate of delivery from the conveyor in which it is installed. Or it can be used to pace auxiliary feeders in automatic processing systems. Conveyoflo is furnished as a separate, self-contained unit— or for installation in your present conveyor lines.

BUILDERS

B-I-I INDUSTRIES (DIVISION OF B-I-F INDUSTRIES) **BUILDERS**

BUILDERS-PROVIDENCE, INC.

387 Harris Ave., Providence 1, R. I.

Please send Bulletin 550-H4 describing Builders Conveyoflo Meter.

Name.....

Company.....

Street.....

City..... State.....

SEND COUPON FOR DETAILS

When inquiring check CP 6294 on handy form, pgs. 2-3

INSTRUMENTATION

Modulated power output makes temp control stepless . . .

advantages reported both in heater life and control without overshoot

Uses: Control units are available for powers from 300 volt amperes to 110 kilovolt amperes in the usual temperature range.

Features: Modulating output is used in place of conventional "on-off" supply. Manufacturer's tests indicate that longer heater life can be attained. Over-and-under shooting of the control point are reduced.

Description: Temperature controller is reported to give unusually close control. It consists of modulating power control for electric heaters and an indicator which shows measured temperatures on 5" scale. Scale is mirrored for parallax correction. In some higher capacity units, more amplification is required and intermediary units may be employed.

Temperature indicator contains parts of instrument control circuit and control pilot lights. Other part contains heavier load-handling equipment. Six-conductor cable connects the two sections. Indicator may be panel mounted and connected to control unit remotely. Two pilot lights are built into indicating section of stepless controller. These indicate when — and how much — power is applied to controller.

One electronic tube is employed (6BL7-GT). This is not a "matched" tube — it may be replaced by the same tube type from any source.

(Model JS Stepless Controller is manufactured by West Instrument Corp., Dept. CP, 525 N. Noble St., Chicago 22, Ill. . . . or for more information check CP 6295 on handy form, pages 2 and 3.)

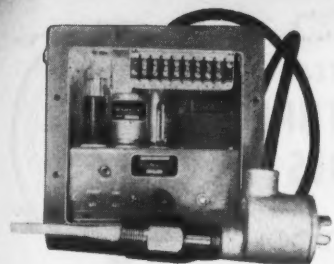
Maintains constant flow with clear liquids, light slurries . . .

even gooey materials like hot tar are handled by direct-acting regulator

Uses: Direct-acting regulator is designed for controlling flow of clear liquids and liquids containing light solids. Capacities of two models range from 2 to 10 and 100 to 550 gpm, respectively.

Features: Down-flow design has self-cleaning characteristic which prevents clogging and blocking by solids.

Description: Self-contained unit accurately regulates flow of light slurries, suspensions, or gooey materials like hot tar, despite fluctuations in inlet or outlet pressures. Not only is design self-cleaning, but it provides for drainage of the regulator when piping system is drained. Regulator employs no air lines, pressure regulators, air filters, seal pots or other auxiliary mechanisms. Pointer can be set for any flow rate within the range and



ELECTR-O-PROBE

Distinguishes liquid level, foam, or even interface between liquids

Probe of this "On-Off" instrument will operate at temperatures as high as 1500° F

USES: Controller gives an "on-off" signal when level covers the probe. Can be used to detect liquid or foam level and operates well with viscous fluids, acids, bead and power catalysts or even in locating a liquid-liquid interface.

FEATURES: Sensitivity control may be adjusted so that instrument reacts to or ignores foam.

DESCRIPTION: Liquid level controller reacts to a change in capacity when probe is covered by a liquid or other flowable material. Capacitance change causes a radio-frequency oscillator to reduce or completely stop oscillation when level rises above the probe. Oscillation starts again when level falls below the probe. This change in operation is used to generate a DC voltage signal, which through an amplifier, operates the relay. A plug-in type relay is normally furnished with a DPDT set of contacts—other arrangements may be obtained for special applications.

* Instrument is self-contained except for probe which is attached to it by a low-loss coaxial cable available in any length up to 100 feet. This permits location of the amplifier unit remotely from the vessel.

* The standard model probe is approximately 6" long and may be coated with any protective material, such as nylon or teflon, or may be left bare for applications on non-conductive products. The probe adapter is threaded with 1" national pipe threads and screws into the vessel wall. Probe may be operated at 30" of vacuum or 1,000 pounds pressure. Flanged type probes are available for the higher pressures.

* Temperatures from 65° F to 1500° F do not hinder probe operations, although the amplifier unit proper is designed to operate from 40° F to 200° F. Standard 110 V, AC power is required with the instrument drawing 32 watts. Only three vacuum tubes are used (2050 or 2051, 65Q7, and 6X4).

For detailed information on any problem write to **ELECTRONICS DIVISION**

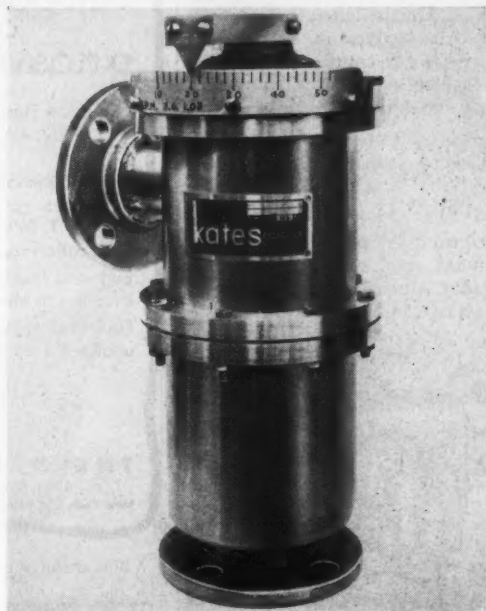
INSTRUMENTS, INC.
122 N. Madison Tulsa 6, Okla.

When inquiring check CP 6296 on handy form, pgs. 2-3

INSTRUMENTATION

changes in inlet or back pressure result in an immediate correction to the set flow rate. Time lag and hunting for the set point are eliminated.

Two models are available. Model 1-SA has flow range from 2 to 10 gpm. Model 7-SA has flow



Pointer (top) is set manually; flow is held to indicated rate

range from 100 to 550 gpm. Both are available in steel casing with stainless trim and valves or as stainless (316) throughout.

(Model SA Flow Regulators are products of W. A. Kates Co., Dept. CP, 430 Waukegan Rd., Deerfield, Ill. . . . or for more information check CP 6297 on handy form, pages 2 and 3.)

Full info on dry supplies for electroprocessing

Two-color booklet describes complete line of manually and automatically regulated metallic rectifier power supplies. Applications in electroplating and similar processes are considered. Sixteen-page publication pictures, diagrams and explains many units and their preferred applications. Tabulated specifications aid in selection. Booklet GEC-970 is issued by General Electric Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 6298 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 6299 . . . see information request blank between pages 2 and 3.

THERE'S MORE FOR YOUR MONEY · IN

PANALARM "50" ANNUNCIATOR SYSTEMS

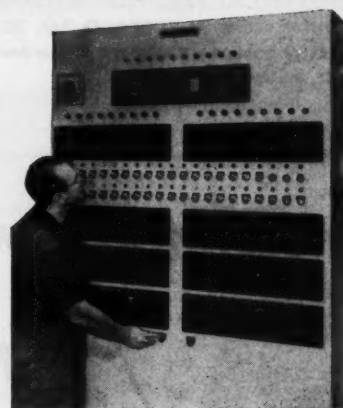
No annunciator system ever offered as much in value as PANALARM "50".

Examine for yourself every piece and component . . . consider the savings you realize through standardization and complete flexibility that only PANALARM "50" provides.

Then, evaluate *dependability*. Beyond all else, PANALARM "50" represents the greatest value in audio-visual alarm systems by its record of *dependable service* alone.

STANDARD CHASSIS

is interchangeable without re-wiring for all types of annunciator service: standard audio-visual; ringback; bullseyes or nameplates; trouble or running signals; lock-outs; or low drain operation.



PANALARM IS PROVEN!

In hundreds of plants—serving for many years—Panalarm Annunciators have demonstrated outstanding performance. They have won confidence for the very critical part they play in plant operation and safety.

PANALARM PLUG-IN UNITS

heart of the system . . . incorporate finest telephone-type relays and special contact arrangements . . . assure sequential operation. Hermetically sealed suitable for Class 1, Div. 2 locations.

SEND FOR COMPLETE MANUAL.
Ask for Catalog 100-A

PANALARM PRODUCTS, INC.
6312 North Broadway • Chicago 40, Illinois



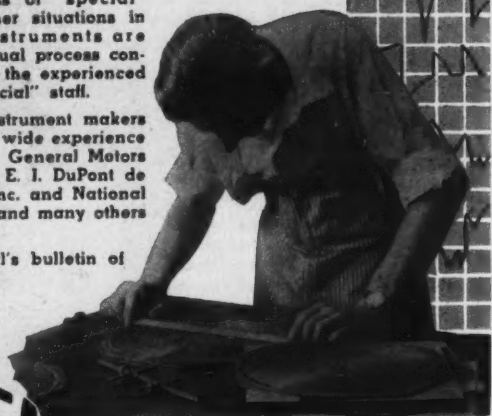
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RECORDING CHARTS MADE TO ORDER

With so many variations of recording techniques, TECHNICAL'S engineering staff has been asked to develop and manufacture hundreds of "special" recording charts. Other situations in which standard instruments are recording under unusual process conditions have received the experienced attention of this "special" staff.

Both industry and instrument makers have made use of the wide experience offered by Technical. General Motors Research Laboratory, E. I. DuPont de Nemours Company, Inc. and National Bureau of Standards and many others are "Special" users.

Write for Technical's bulletin of "Special" services.



TECHNICAL CHARTS INCORPORATED

188 VAN RENSSELAER ST.

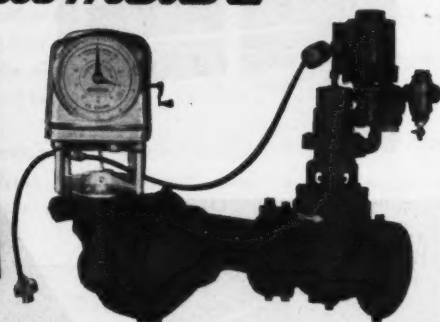
BUFFALO 10, N. Y.

Nationally Represented by TECHNICAL SALES CORPORATION, 16599 Meyers Road
Detroit 35, Michigan

When inquiring check CP 6300 on handy form, pgs. 2-3

THE Fluidometer SYSTEM

for the
automatic
batching of
light or
heavy liquids



Adaptable to a wide variety of measuring problems

The Fluidometer System provides an accurate, dependable, and completely automatic method for batching liquids, either light or heavy. It is available in either jacketed or unjacketed construction, and is adaptable to practically any liquid measuring problem, whether it involves gallons, barrels or tank car lots. Equally accurate on liquids of high or low viscosity. Anything that can be handled through a meter can be accurately batched by the Fluidometer. The automatic reset, an exclusive feature of Fluidometer, is invaluable in large scale production work requiring steady repetition of operations.

Bulletin FI-49, giving complete information on the Fluidometer System, will be sent on request.

HETHERINGTON & BERNER INC.

711 KENTUCKY AVE.

INDIANAPOLIS 7, IND.



When inquiring check CP 6301 on handy form, pgs. 2-3

INSTRUMENTATION

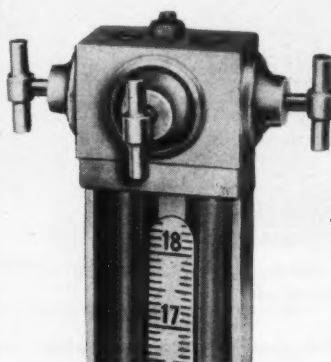
Manometer, by-pass connections cut from 12 to 2

three-valve manifold allows all possible combinations

Uses: Unitized manifold combines three valves in one unit. It provides for coupling manometer to two taps with complete valving flexibility.

Features: Conserves space and material by reducing number of connections for three valves and fittings from 12 to 2.

Description: Brass, anodized aluminum, steel, or stainless body combines three compact valves with service for connections. Only



Seals through glass "U" tube with special grommets

two pipe connections are required (beside manometer "U"). Provision is made for sealing body to glass tubes with special rubber grommets. Assembly consists of two shutoff valves and one by-pass valve. Internal diaphragms and internal seats are made of stainless.

("Demi-34" Unitized Manifold is manufactured by George W. Dahl Co., Dept. CP, Bristol, R. I. . . or for more information check CP 6302 on handy Reader Service slip located between pages two and three.)

Processing & Engineering Data

Section Starts on page 198

REMOTE STEM TEMPERATURE CONTROLS FOR OUTDOOR-INDOOR OR EXPLOSIVE ATMOSPHERES



Bourdon Tube Power Element—Visible Calibrated Dial Fully Adjustable As To Range And Sensitivity External Adjustments

Mercoid Remote Stem Temperature Controls are available in ranges varying from minus 30°F. to plus 60°F. to 370-530°F. in the sensitivity and circuit arrangement your application requires.

Bulb and capillary tubing are available with special construction to meet various industrial needs.

Equipped with the Mercoid Sealed Mercury Contact—unaffected by dust, dirt, grease or corrosion.

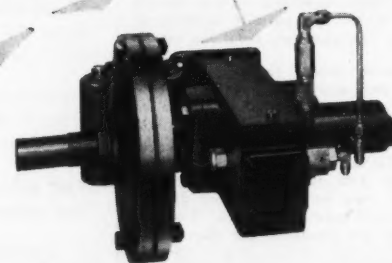


WRITE FOR BULLETIN NO. 30

THE MERCROID CORPORATION
4201 BELMONT AVENUE, CHICAGO 41, ILLINOIS
New York, 205 East 42nd Street • Philadelphia, 317 North Broad Street

When inquiring check CP 6303 on handy form, pgs. 2-3

Mèasure & Transmit MICRO-PRESSURES



the ASKANIA PNEUMATIC TRANSLATOR

For the transmission of low static or differential pressures . . . in the range of 0-1.0 w.c. or higher. For automatic control or recording of pressure, flow, or liquid level.

It measures low-level signals and transmits an air signal or output pressure at a higher level . . . usually standard instrument range of 3-15 p.s.i. Accurate to $\pm 0.5\%$. Diaphragm measurement of static or differential pressures eliminates trouble associated with mercury manometers.

For additional details, ask for bulletin 154.

ASKANIA REGULATOR COMPANY
242 E. Ontario Street Chicago 10, Illinois
Subsidiary of General Precision Equipment Corp.

When inquiring check CP 6304 on handy form, pgs. 2-3

CHEMICAL PROCESSING

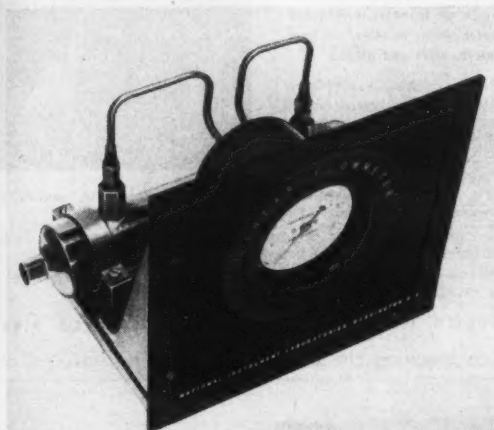
Linear scale shows gas flow . . .

volume rates to 30 cfm accommodated at any temperature from -60 to 180°F

Uses: Flow ranges from 0.003 to 30 cubic feet per min of most gases are available in flow meter.

Features: Instrument will operate with pressures up to 20 psig or, in vacuum service, to absolute pressures as low as 0.5 psia (28" vacuum).

Description: Dial indicating gas flow meter consists of differential pressure gage plus linear pressure drop flow element. Useful in semi-re-



Does not require leveling for proper operation

mote application, indicator can be placed several feet distant from the flow element. Neither element nor indicator requires leveling for proper operation.

Use of mechanical differential pressure gage makes it possible to operate flow meter over temperature range from -60 to 180°F.

(Mod 30 Vol-O-Flo Gas Flowmeter has been developed by National Instrument Laboratories, Inc., Dept. CP, 6108 Rhode Island, Riverdale, Md. . . or reader may secure additional information by checking CP 6305 on convenient Reader Service slip between pages two and three.)

Shows supply sources for heavy chemicals

Plant location for chemical plants producing caustic, salt and brine, sulfur, soda ash, and many other basic industrial chemicals is given in directory. List gives company name and plant location. Entire United States is covered.

To obtain "Plant Location Directory of Basic Chemical Products," remit \$1 direct to State of Tennessee, Industrial and Agricultural Development Commission, Dept. CP, 517 Commerce St., Nashville 3, Tenn.

How would YOU solve these two problems?



1. HE LIKES LIFE SAVERS because they're good. Life Savers Corporation had the problem of *exactly* determining candy moisture content — required 1°F temperature control — found this *accuracy* in Fenwal All-Purpose THERMOSWITCH® unit. Cost of control was low — results excellent.



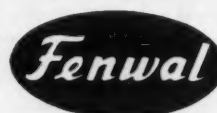
2. PARAFFIN BATHS are important physical therapy equipment. For safety, temperature must be held within close limits. Makers of Dickson Paraffin Baths selected Fenwal THERMOSWITCH devices as entirely dependable and accurate in controlling heating unit.



3. A FENWAL THERMOSWITCH CONTROL may solve your problems, too. Its external, single-metal shell expands or contracts *instantly* with temperature changes, making or breaking enclosed electrical contacts. Compact, highly resistant to shock and vibration, Fenwal THERMOSWITCH units have solved hundreds of otherwise costly problems.



4. SEND FOR THIS NEW CATALOG for complete explanation of the unique THERMOSWITCH unit. Also ask for more detailed, illustrated discussions of the problems above. Fenwal engineers will be glad to help you solve your temperature control problems involving heat, humidity, radiant heat, pressure and other variables. Write Fenwal Inc., 242 Pleasant Street, Ashland, Massachusetts.



THERMOSWITCH®

Electric Temperature Control and Detection Devices

SENSITIVE . . . but only to heat

When inquiring check CP 6306 on handy form, pgs. 2-3



How to select the right liquid meters

... to save time and ingredients, with closer quality control, and more accurate cost accounting. That's the subject of this helpful free bulletin. It covers meters for measuring hot and cold water, oils, syrups, brines, soap solutions, and many other chemical solutions that can be handled by composition bronze meters. Illustrates sizes from 1/2" to 6", with rates of flow to 1000 gpm. Registers range from simple counters to the newest Auto-Stop automatic batching meters. A gold mine of information for any processing engineer. Bulletin 566U P.

Get started now! Write or phone nearest Neptune office, or check off the Reader Service Card in this publication.

NEPTUNE METER COMPANY
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Acetate, Amyl	Kerosene
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Acetate, Lead	Linseed Oil
Acetone	Liquid Soap
Alcohol, Amyl	Lubricating Oil, Hot
Alcohol, Ethyl	Lubricating Oil
Alcohol, Methyl	Mesityl Oxide
Ammonium Nitrate	Methylated Spirits
Solution	Methyl Bromide
Ammonium Sulfate	Methyl Cellosolve
Solution	Methyl Formate
Asphalt, Liquid	Methylene Chloride
Banana Oil	Mineral Oil
Barium Chloride	Mineral Spirits
Benzol	Molasses
Boiled Oil	Monochlorobenzol
Borax Solution	Naphtha
Brine	Nitrocellulose Lacquer
Bronzing Liquid	Oleic Acid
Bunker "C"	Oleum Spirits
Butanol	Orthodichloro Benzene
Calcium Chloride Brine	Paint
Carbon Bisulphide	Paraffin Oil
Carbon Tetrachloride	Paste
Castor Oil	Perfume
Cellulose Solvent	Petrolatum
China Wood Oil	Pine Oil
Chloroplatin	Plasticizer
Chocolate	Polymer, Molten
Cleaner, Asphalt Tile	Potassium Carbonate
Cocoa Butter	Propylene Glycol
Coconut Oil	Pyrethrum Mixtures
Code Rubber Oil	Rum
Coffee	Shellac, Alcohol Sol.
Condensate	Silicone Oil
Corn Molasses	Silicon Tetrachloride
Corn Syrup	Size Solution
Cotton Seed Oil	Soap Solution
Crude Oil	Sodium Benzoate
DDT	Sodium Carbonate
Dextrine Solution	Sodium Chloride
Diacetone	Sodium Silicate
Diethyl Phthalate	Soy Bean Oil
Diethyl Carbitol	Starch Solution
Diethylene Glycol	Stearic Acid
Diethyl Hexyl Phthalate	Stoddard Solvent
Dimethyl Phthalate	Styrene Monomer
Diocetyl Phthalate	Sugar Syrups
Dope (Nitrocellulose)	Tallow
Esther Gum Oil, Drying	Tannic Acid
Ethyl Cellosolve	Tire Compound
Ethylene Glycol	Trichlorethylene
Fish Oil	Tricresyl Phosphate
Formaldehyde	Tungwood Oil
Freon	Turpentine
Fuel Oil, Hot	Varnish
Glucose	Varsol
Glue, Water Solution	Vinyl Lacquer
Glycerine	Water
Grease	Wax Emulsions
Ink, Oil Vehicle	Whiskey
Ink, Water Vehicle	Wine
Isobutylene	Xylol
Isopropanol	
(Isopropyl Alcohol)	

148 INDUSTRIAL LIQUIDS ARE LISTED ...
How many of these can you handle better with Neptune Meters?

INSTRUMENTATION

Advanced principle in mass spectrum instrument ...

"ion-resonance" mass spectrometer covers 1-100 range

Uses: Instrument has been designed specifically for process instrumentation involving atomic mass measurements or mass-to-charge ratios.

Features: Operation covers approximate range of 1 to 100 mass units.

Description: Ordinarily, analysis of a mixture by spectrometer is accomplished by mass separation of ions formed in high vacuum. Ion formation is a product of electron bombardment of vapors present. Ions are then accelerated to provide constant energy ion beam which is passed through a magnetic field. Spectrum separation is accomplished by difference of deflection of the ions in the field.

Ion-resonance mass spectrometer allows ions to be formed within the magnetic field to start with. Ions of specific mass are caused to follow a spiral path to collector. This is done by imposing a radio-frequency electrostatic field. The frequency of the field determines that only ions of a definite mass-to-charge ratio will be received by collector. As frequency is varied, complete spectrum is observed and relative amounts can be gaged.

Spectrometer employs analyzer tube using resonance phenomena to separate ions of different mass units. Permanent magnet produces steady magnetic field. Radio frequency oscillator provides field necessary for resonating the ions. Output of instrument can be read directly on large meter. It can also be supplied for external recording equipment.

Mass spectrometer consists of cabinet 24 inches wide, 30 inches deep, and 47 inches high. Power requirement is 15 amp at 115 v, 60 cy AC. Diffusion pump incorporated in equipment requires two to five gallons of cooling water per hour. Blower within cabinet supplies 200 cfm of air.

(Ion-resonance Mass Spectrometer is manufactured by General Electric Co., Dept. CP, 1 River Road, Schenectady 5, N. Y. ... or check CP 6308 on form located between pages 2 and 3.)

INSTALL IT! FORGET IT!

THAT'S all you have to do with this Taylor Self-Acting Temperature Controller! Simple, dependable, needs practically no maintenance. Ideal where your process involves no extreme load changes. Where compressed air or electricity aren't available.

For jobs like: wax coating machines, plating and rinsing tanks, bottle and can washers, mixing and cooling kettles, hot water tanks, diesel water jackets, feed water systems, crude oil treaters, condenser cooler water in stills, oil field superheaters and others.

No auxiliary air supply required. Double seated valves available up to 2"; single seated composition disc types up to 1". Numerous standard temperature ranges within 10° to 340°F., and semi-standard temperature ranges within 165° and 610°F. Choice of bulb materials and type of connection.

Ask your Taylor Field Engineer or write for **Catalog 36-R**, Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 6309 on handy form, pgs. 2-3

Depend on
AUTO-LITE

for
Temperature Indication

You Benefit from  Eye-Level Readings



Model F-1 temperature indicator

3-way adjustable mounting

Auto-Lite offers many thermometer styles, permitting plant-wide temperature observation at low cost. Standard temperature ranges from minus 60°F. to plus 750°F. Send for latest catalog showing various types.

THE ELECTRIC AUTO-LITE COMPANY
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Rigid stem or capillary tubing for FIVE-LEVEL remote reading. Priced from \$22.

TEMPERATURE INDICATORS & RECORDERS

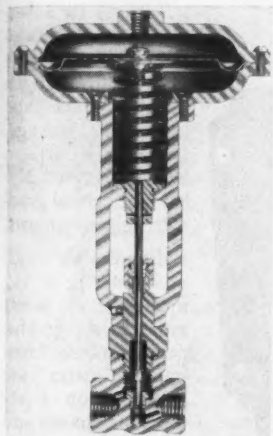
When inquiring check CP 6310 on handy form, pgs. 2-3

Automatic control for lines 1/8 to 1/2" diam . . .

control valves are especially useful in pilot plant and low flow rate work

Uses: Pneumatically operated control valves are designed for 1/8, 1/4, and 1/2" pipe. They can be used in pilot plant work or where small flows are being handled.

Features: Characteristics of conventional full-size control valves are obtainable — equal percentage, linear, or quick opening types are made for operation in the standard 2-15 psi control range.



Description:

Miniature control valves are similar in construction to full sized valves. They can be used for regulation and control of flow, liquid level, temperature, and pressure of any fluid, gas, or steam. They are also sometimes used in loading large valves.

Conventional motor construction is used with a 2 to 15 psi diaphragm-operated arrangement. Both air-to-close and air-to-open valves are built for static or dual pressure loaded service. Body patterns are available in two or 3-way angle or straight connection for threaded fittings. Threaded bonnet with Teflon packing is used. Body, bonnet, and topworks are interchangeable within pipe sizes.

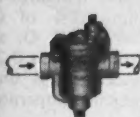
Heavy cast aluminum topworks are chromate primed and finished with baked lacquer. Diaphragm is Neoprene and a stainless stem is used. Usual range of body materials — carbon steel, 304 stainless, cast bronze, 316 stainless, Monel, and Hastelloy C — are available.

(Minim miniature control valves are built by Research Controls, Dept. CP, P. O. Box 5035, Tulsa, Okla. . . or for more information check CP 6311 on handy form, pages 2 and 3.)

Need instrumentation for that process? . . .

You'll find just what you need in the alphabetized, itemized Product Directory on pages 221 to 224. All subjects and products presented in ads and editorial columns are there.

How Armstrong Traps Save you Money



Choice of body styles saves money on installation costs.



Two phase leverage means higher capacity in a smaller trap. Armstrong traps have optimum relation between leverage, valve travel, bucket weight, capacity and overall size.

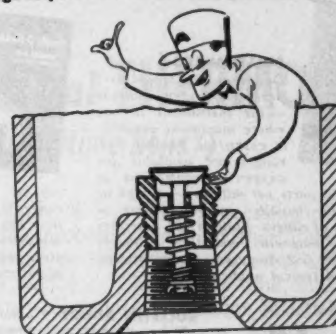


This trap with built-in strainer costs less than separate trap and strainer—requires less labor and fittings to install.



Hardened, ground and lapped valve and seat; stainless steel mechanism resists wear and corrosion—saves money on maintenance.

This internal check valve saves labor and fittings required to install regular check valve.



Get the full facts on money-saving Armstrong traps. Send for free Catalog J. Clip and mail coupon today.

ARMSTRONG STEAM TRAPS

ARMSTRONG MACHINE WORKS
880 Maple Street, Three Rivers, Michigan

Gentlemen: Please send me a free copy of Catalog J, The Armstrong Steam Trap Book.

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When inquiring check CP 6312 on handy form, pgs. 2-3

Have you this **LATEST DATA**

on the revolutionary

Arnold O. Beckman INC. **OXYGEN ANALYZERS?**

Throughout industry — wherever oxygen content of gases influences or controls chemical processing or combustion operations — Arnold O. Beckman Oxygen Analyzers are establishing completely new standards of accuracy, simplicity and convenience. These are the *only* instruments that make a direct physical measurement on oxygen itself — not of some variable secondary relationship.

Have you fully investigated the vital savings to be made by this revolutionary measuring principle in *your* operations? Are you aware of the latest money-saving applications for this equipment? If not, send for the following helpful literature. It's free!



BULLETIN 103: Describes the Model G-2 Beckman Oxygen Analyzer — the instrument to use where maximum accuracy is essential. Model G-2 ranges are available for oxygen concentrations as low as 0-1000 parts per million — as high as 95-100% — or virtually any other range or combination of ranges. Bulletin 103 describes the unique magnetic operating principle used in Model G-2 Analyzers, equipment, accessories and typical applications.



BULLETIN 108: Describes the Model F-3 Beckman Oxygen Analyzer — the instrument designed primarily for industrial applications such as combustion control, catalyst regeneration, sulfur grinding, etc., which require an oxygen measuring range of 0-5%, 0-10%, 0-15% or higher. Bulletin 108 describes the unique magnetic operating principle used in Model F-3 Analyzers, gives equipment specifications and typical applications for this instrument.

BULLETIN AD607: Contains helpful charts and data on most efficient methods of controlling various combustion processes.

BULLETIN AD610: Contains helpful data on Chemical Applications, illustrates a typical installation, lists equipment required.

BULLETIN AD611: Contains helpful data on Tunnel Kiln Applications, shows typical installation, details equipment required.

BULLETIN AD613: Contains helpful data on measuring O₂ content of High Purity Gases, shows typical sampling system, lists equipment required.

Arnold O. Beckman INC.

1020 Mission Street, South Pasadena 4, California

Please send Bulletins checked below:

☐ 103 ☐ 108 ☐ 607 ☐ 610 ☐ 611 ☐ 613

Name _____

Company and Address _____

Position _____

The above informative literature will gladly be sent you free. For maximum convenience, use the coupon at right.

CHECK THESE IMPORTANT ADVANTAGES OF ARNOLD O. BECKMAN OXYGEN ANALYZERS

DIRECT MEASUREMENT: Operating principle is based on unique paramagnetic properties of Oxygen. Arnold O. Beckman Oxygen Analyzers measure oxygen by *direct physical* means. No chemicals are required, no saturated atmospheres, no "hot wires" or other complex devices that may alter the composition of the sample gas.

HIGH ACCURACY: Readings are accurate within $\pm 1\%$ of full scale for spans of 2% O₂ and greater (e.g. .02% O₂ on 0-2% O₂ range). Accuracy is unaffected by ambient temperature variations.

LINEAR SCALE: Calibration of Arnold O. Beckman Oxygen Analyzers is strictly linear and the scale is accurate over the entire range.

SIMPLE SAMPLING: Only a small volume is necessary — 50-250 cc. per minute. Accuracy is not affected by variations in flow rate. Samples may be dry or saturated. Nothing is added to the sample, and it may be returned to the process unchanged. Many corrosive or reactive gases can be analyzed.

COMPLETELY AUTOMATIC: Sampling and measurement are continuous and automatic. No attendant is necessary.

RUGGED CONSTRUCTION: The unit is shock mounted to protect it from extreme vibration and shock. Maintenance is negligible—no chemicals, filaments, wicks, etc., to replenish—no orifices or glassware to clean and replace.

MANY RANGES: From a few parts per million to 100% O₂. Multi-range instruments are also available.

Your inquiries on oxygen measuring and control problems are welcomed. Please write directly to our head office giving data on the requirements of your particular application.

INSTRUMENTATION

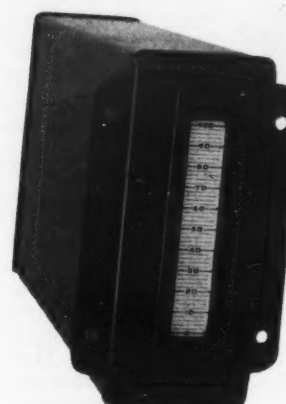
Pneumatic signal drives ribbon in miniature indicator . . .

bellows motor positions colored Nylon ribbon behind graduated glass

Uses: General purpose indicator is small enough for easy incorporation in graphic panels.

Features: High visibility of colored portion of ribbon in indicator makes internal illumination unnecessary.

Description: Indicator receives pneumatic signal from remotely located transmitter. Pressure



Measures $\frac{3}{4} \times 4\frac{1}{4}$ inches

is applied to a bellows which rotates two lightweight drums through a stainless steel tape and lever linkage. Drums position brightly colored Nylon tape behind graduated glass windows.

Indicator scale measures only $\frac{3}{4} \times 4\frac{1}{4}$ inches—it fits easily into most graphic panel symbols. Component parts are mounted on a removable chassis and protected by a housing which is secured to back of panel.

Complete mechanism can be removed without disturbing scale, case, or panel. Zero, range, and damping adjustments are then accessible.

Optional features include dual scales, direct or reverse response to signal, alarm contacts of the mercury switch type.

(Model 50 Consotrol Indicator is a development of The Foxboro Company, Dept. CP, Foxboro, Mass. . . . or for more information check CP 6314 on handy form, pages 2 and 3.)

Viscosity-by-torque devices now applied to vessels, process piping . . .

drag on rotating element can now be followed in steps under vacuum, pressure, high temp

Uses: For measuring and recording viscosity of process material in tanks, process vessels, pipelines, or other closed vessels.

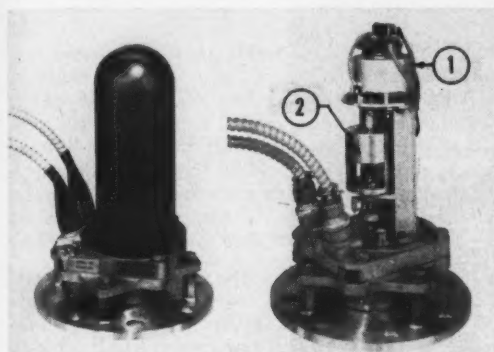
Features: Rotating element device can be used with vacuums of 8 mm, pressures to 100 psi and reasonably high temperatures—so long as temperature at base of sensing mechanism is 200°F or lower.

Description: Viscosity instruments are based on drag of liquid on rotating spindle. Torque required to produce a fixed speed of rotation is di-

When inquiring check CP 6313 on handy form, pgs. 2-3

INSTRUMENTATION

rectly proportional to viscosity in centipoise. Sensing element transmits viscosity signal electrically and continuously. Rotating element method, incidentally, has been found to produce reliable viscosity readings (at constant "rates of shear") with non-Newtonian material.



With cover removed (right) 1 is drive motor and 2 is condenser or resistor transmitter

Wide range of materials can be handled since viscosities of 0-10 to 0-50,000 cps are measurable with this setup. Instrument is capable of measuring suspensions, emulsions, slurries, and other fiber-bearing materials. Range of instrument can be easily varied by changing spindle. Accuracy of the instrument is 1% of full-scale range. Furthermore, it is sensitive to changes of 0.2% and reproducible also to 0.2%. Electrical output is designed to work directly into standard recording and controlling instruments.

Though viscosity instrument is mountable directly on vessels with a 4", 125 lb standard pipe flange, it may also be mounted in special installations such as the one shown, or in a 3" OD baffle tube which is preferred where turbulence (in mixing tanks, etc) is encountered.

(Viscometran is a development of Brookfield Engineering Labs, Inc., Dept. CP, 240 Cushing St., Stoughton, Mass. . . or for more information check CP 6315, pages 2 & 3.)

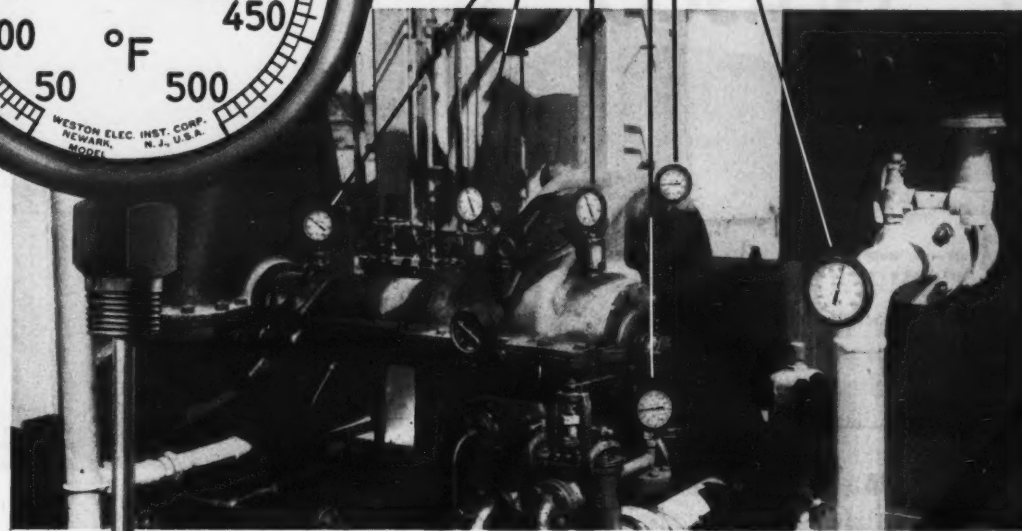
Details conductivity meter for gas measurements

Illustrated 4-page bulletin is printed in two colors. Describes in detail a thermal conductivity analyzer for making gas measurements.

Bul GMH-853 is issued by Gow-Mac Instrument Co., Dept. CP, 100 Kings Road, Madison, N. J. When inquiring specify CP 6316 on handy form, pages 2 and 3.



AT EVERY CHECKPOINT

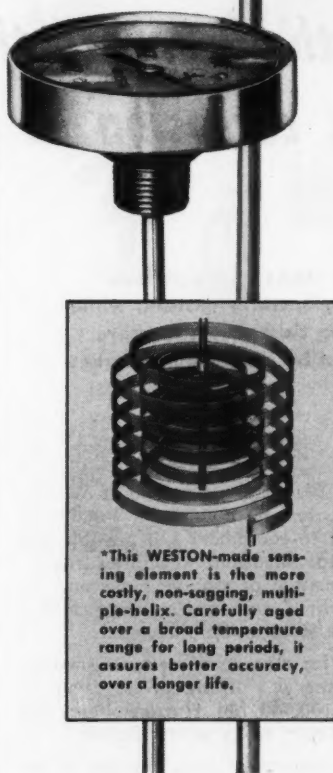


WESTON all-metal THERMOMETERS

(with Multiple Helix*)

Here's another typical example of how large processing plants have solved temperature checking problems, and cut thermometer costs besides. With a WESTON dial-type thermometer at every checkpoint, temperatures are read at a glance . . . in far less time, and with far greater accuracy. Their sturdy all-metal construction resists breakage, gives them far longer life on operating equipment. And the exclusive WESTON multiple helix employed assures dependable accuracy during all this long life.

Available in a broad selection of types, sizes, ranges and stem lengths, WESTON thermometers are today standard on all types of mobile and stationary equipment and machines, large and small; as well as on piping, conduit, ducts, etc. Ask your distributor, or local WESTON representative for complete information, or write for descriptive bulletin . . . WESTON Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, New Jersey.



*This WESTON-made sensing element is the more costly, non-sagging, multiple-helix. Carefully aged over a broad temperature range for long periods, it assures better accuracy, over a longer life.

WESTON

5537

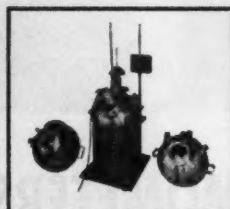
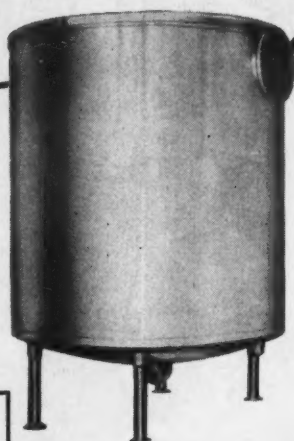
Thermometers

Stocked
by leading
Distributors

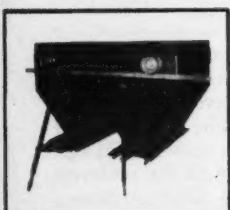
When inquiring check CP 6317 on handy form, pgs. 2-3

METAL EQUIPMENT for CHEMICAL PROCESSING Custom Made by GLASCO

Jacketed stainless
steel storage
tanks. →



Special laboratory stills.



Overhead hoppers.

Many of the country's great Chemical, Pharmaceutical, Soap, Rubber, Plastics, and other industrial concerns come to Glasco for the fabrication of metal processing equipment because:

- GLASCO works constantly in stainless steel, monel, and other non-corrosive metals.

- GLASCO engineers and fabricators not only work to customer's blue prints or specifications, but also offer a complete design and engineering service.

- The range of GLASCO products includes every type of equipment, from standard trays and trucks to the largest and most intricate units; also special equipment in which heat transfer or pressure are concerned.

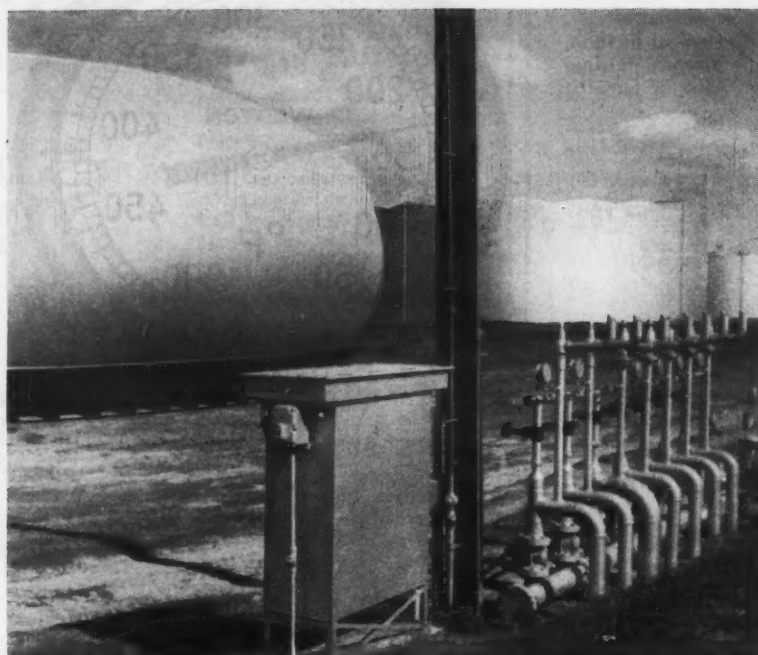
- GLASCO meets all ASME requirements.

Think first of Glasco
when you have need for the finest metal fabrication

GLASCO EQUIPMENT CORP.	
Pioneer Fabricators of Stainless Steel Equipment	
10 WAIT STREET	PATERSON 4, N. J.
Phila. Area: Morley Organization 1200 Commercial Trust Bldg. Philadelphia 2, Pa. South: Henry H. Hensley Co., 44 Herwood Place, Greenville, So. Car. New England: Morris & Underhill, 446 Statler Bldg., Boston, Mass.	New York State: Sanders Industrial Equip. Co. 1251 Broadway Albany 4, N. Y.

When inquiring check CP 6318 on handy form, pgs. 2-3

corrosion control



Photograph taken at Warren Petroleum's tank terminal near Houston shows rectifier for cathodic protection system in left foreground

dual cathodic protection system controls corrosion at Warren Petroleum

Corrosion of tanks and pipelines prevented by rectifier system, while steel mooring clusters for tankers are protected by magnesium anodes

Problem: The Warrengas Terminal of Warren Petroleum Corporation, near Houston, Texas, had to prevent damage to equipment and possible loss of product due to corrosion. Facilities requiring protection consisted of storage tanks and interconnecting pipelines, and steel mooring clusters located just off the Houston Ship Channel.

Terminal is used for storage of natural gasoline, butane, and propane at working pressures up to 250 psi. Seven 100,000 bbl Hortonspheres are included among the 75 tanks at installation.

Network of interconnecting lines consists of an average of six lines to each tank. Dock lines,

incoming pipe lines, water lines, gas lines, and conduit are also part of installation. Although product lines are all of steel welded seamless construction, and bottoms of tanks are placed on sand, some additional protection from corrosion was required.

Each of the eight mooring clusters in channel is composed of 30" steel piling braced with four 12" steel batter piles, all tied together with 6" steel pipe. Water depth varies from 10 to 36' and total submerged area is approximately 925 sq ft per structure. Steel piling of mooring clusters is subjected to an aqueous environment which is quite corrosive both because of its relative salinity during dry spells and pollution of waters in the ship channel. It was evident that some type of protection would also be required here.

Solution: In March of 1950 an engineering survey of tanks and pipelines at terminal was made in which two different methods of cathodic protection were outlined. These were (1) a distributed magnesium anode installation which

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would drain approximately 35 amp of current from the structures and (2) a rectifier installation of 10 v, 75 amp capacity which would drain approximately 60 amp of current from a single point. Addition of several more tanks later in 1950 warranted use of the larger 12 v, 100 amp rectifier actually installed in Sept. and Oct. of 1950.

A grounded of 10 graphite anodes was installed in three groups, with 3' of Neoprene-covered copper lead wire attached to each anode. Anodes were placed in 18" x 9' augered holes surrounded by well-tamped metallurgical cokebreeze backfill. Approximately 1045' of Neoprene-covered copper cable was used to connect anodes to rectifier, with cable buried in a trench. All connections were Cadwelded, wrapped with tape, and doped.

Steel-reinforced concrete platform supports the rectifier, which is a 440 v Good-All unit. All connections to the pipes were Cadwelded and doped. Rectifier unit was turned on and adjusted to 11.2 v, 66 amp. Potential checks revealed adequate protection with remote points up to approximately 0.85 v (negative with respect to copper/copper sulfate electrode).

It is a good idea to make frequent inspections of a rectifier type cathodic protection system to determine if it is functioning properly. In this case weekly checks, with investigation of any great change, were recommended. Natural tendency exists for current output to decrease slightly with increase in polarization. Annual resurveys were also recommended.

When construction of the steel mooring clusters was completed in Sept. of 1952, a magnesium anode cathodic protection system was recommended. Accordingly, in Dec. of 1952, a string of five Dow Type 51R magnesium anodes spaced on a 20' length of 3/4" steel rod was attached to each of the eight mooring clusters. Copper lead wire was connected to tab on 30" of piling above water line, with a solder lug and 1/2" Monel bolt on each cluster.

After two or three weeks had elapsed — sufficient time to permit a fair degree of polarization — potential checks taken with a calomel electrode indicated that full protection was being achieved. Anode string outputs varied from 2.5 to 4.8 amp, corresponding to replacement life of six and three years respectively. Periodic checks to insure effective performance were recommended.

Results: During the three years since the rectifier cathodic system was placed in service and the one year since the magnesium anode system was installed, no indication of any failure due to corrosion on any of the protected structures has been evident.

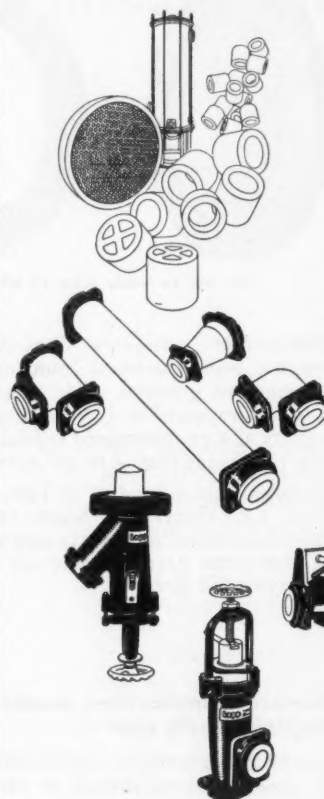
(Cathodic protection system was engineered and installed by Cathodic Protection Service, Dept. CP, 4601 Stanford St., Houston 6, Tex. . . . or for more information reader may simply check CP 6319 on convenient Reader Service slip located between pages 2 and 3.)

Nothing defies corrosion like

PORCELAIN

Chemical inertness to acids of all concentrations is a characteristic of porcelain. And, as made by Lapp, it is pure, dense, hard, close-grained, homogeneous and non-porous. This means there can be no penetration of Lapp Porcelain—no crumbling from capillary pressures—no absorption of liquids to contaminate later processing.

Valves, pipe, towers, and special shapes of Lapp Chemical Porcelain are operating with almost unlimited service in hundreds of installations where "no other material would ever handle the corrosion problem." At cost figures that sets records for economy, too. For Lapp Chemical Porcelain equipment costs but a fraction of that for special alloy and lined equipment—and quickly makes up, in reduced maintenance and elimination of need for replacement, the difference in its initial cost over that of cheaper "corrosion resistant" materials. Security and safety of plant and personnel haven't been overlooked. With TUFCLAD (fiberglass-reinforced Epoxide resin armor) Lapp Chemical Porcelain is protected against accident or carelessness. It will hold operating pressures against gross leakage, even though damaged by impact, thermal shock, explosion or fire.



ANGLE AND Y-VALVES 1/2" TO 6"
PLUG COCKS 1", 1 1/2", 2"
FLUSH VALVES FOR 3", 4", 5"
TANK OUTLETS
PIPE AND FITTINGS 1/2" TO 8"
TOWERS 12", 18", 24"
RASCHIG RINGS 3/8" TO 3"
TOWER PLATES

WRITE for Bulletin describing characteristics of Lapp Chemical Porcelain, and listing Lapp valves, plug cocks, safety valves, flush valves, pipe, fittings, towers, raschig rings and other equipment. Lapp Insulator Co., Inc., Process Equipment Division, 168 Wendell St., Le Roy, N. Y.



When inquiring check CP 6320 on handy form, pgs. 2-3

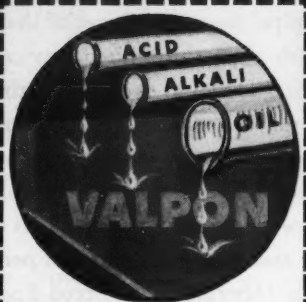
VALDURA VALPON

Protects this food processing plant!



Competitive tests determined the specifications for protective finishes in this famous food plant. And Valdura's Valpon was the winner! Valpon, incorporating the wonderful new Epon Resins produced by Shell Chemical, provided the most protection against

- ★ **OILS...** animal, vegetable or mineral
- ★ **ACIDS**
- ★ **ALKALIES**



For proof

of Valpon's resistance to acids, alkalies, and oils—ask the Valdura representative for a demonstration. *Seeing is believing!*

If you'd like to know more about Valpon and other items in Valdura's complete line of specialized maintenance products, or if you'd like help with a particular problem, just state your wishes on your regular letterhead and mail to the address below. Your inquiry will be treated as an invitation to provide service...not as a license to exert selling pressure!



VALDURA HEAVY DUTY PAINT DIVISION

AMERICAN-MARIETTA CO.
101 E. Ontario St., Chicago 11, Ill.

When inquiring check CP 6321 on handy form, pgs. 2-3

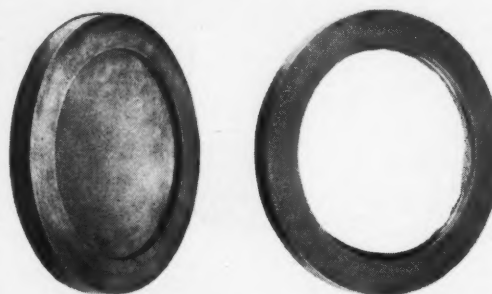
CORROSION

Automatically releases pressures in systems carrying corrosive gases and liquids...

graphite disc is durable and resists shock after sudden temperature changes

Uses: To release dangerous built-up pressures in systems carrying corrosives such as hydrochloric acid and alkalis.

Features: Machined entirely of durable graphite, rupture disc requires little or no maintenance. Simplified design facilitates replacement after rupture. Unit is especially resistant to shock caused by sudden temperature changes.



Disc can be easily replaced after rupture

Description: Rupture disc is entirely non-metallic, being machined from Impervite, a resin-impregnated graphite. Unit consists of graphite ring and expendable disc. Disc is engineered to rupture at a predetermined critical pressure. Available sizes range from 4 to 16" outside diameter.

(Rupture disc is product of Falls Industries, Inc., Dept. CP, Aurora Rd., Solon, Ohio... or for more information reader may simply check CP 6322 on convenient Reader Service slip located between pages two and three.)

Numerous applications possible for rigid plastic pipe...

offers lightweight, dimensional stability, and high structural strength in two types

Uses: For applications in or out of doors where chemical, atmospheric, and electrolytic conditions create problems in use of metal pipe. High dielectric strength, low water absorption, and non-flammable characteristics are said to make pipe useful as an electrical insulator and for conduit.

Features: Plastic pipe is said to feature resistance to a wide range of organic and inorganic chemicals. It is practically unaffected by all mineral acids, bases and salts, chlorine, oil, grease, gasoline, alcohol, and carbon tetrachloride. It is immune to rot, rust, and electrolytic corrosion.

Description: Weighing only 1/5 as much as steel pipe (and approximately 1/2 as much as aluminum pipe), rigid, non-plasticized polyvinyl chloride

Less than
3¢



worth of
**DOW CORNING
ANTIFOAM A**

kills foam in:

- 300 lbs. of butadiene-styrene latex
- 1500 lbs. of maple-cane syrup
- 1000 lbs. of phenolic resins
- 400 lbs. of casein adhesive
- 500 lbs. of floor wax emulsion

and

- Saves space now wasted on foam in process equipment.
- Cuts processing time.
- Eliminates the waste and fire hazard of overflowing foam.
- Nontoxic and safe to use, Dow Corning Antifoam A is the most versatile and efficient defoamer on the market.

DOW CORNING ANTIFOAM AF EMULSION

This water dispersible emulsion of Antifoam A is equally versatile, equally effective in the industrial processing of aqueous foamers.

see for yourself!

mail coupon TODAY for
free sample

DOW CORNING SILICONES

Dow Corning Corporation
Midland, Michigan,
Dept. BB-14

Please send me data and a free sample of
☐ Dow Corning Antifoam A
☐ Dow Corning Antifoam AF Emulsion

NAME _____
 COMPANY _____
 ADDRESS _____
 CITY _____ ZONE _____ STATE _____

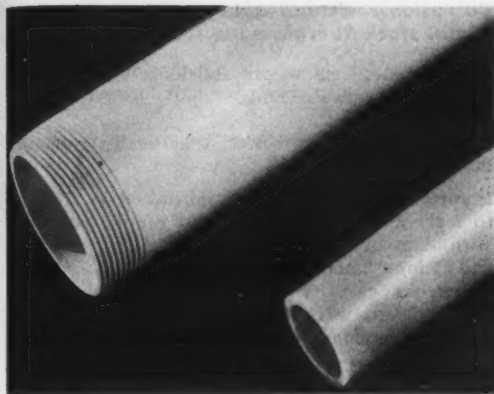
When inquiring check CP 6323 on handy form, pgs. 2-3

CHEMICAL PROCESSING

plastic
tools.
which
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high-i
resista
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Pipe
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and
(Coa
Dept
Mass
simpl
form



Immune to rot, rust, and electrolytic corrosion

plastic pipe can be installed rapidly without special tools. Lengths are assembled by conventional means which facilitate connection of complete plastic systems to previously installed metallic lines.

Plastic pipe is available in two types: 1) a medium-impact pipe with high chemical resistance; and 2) a high-impact pipe with a small sacrifice in chemical resistance. Maximum working pressures range from 195 to 550 psi.

Pipe is available in standard pipe sizes schedule No. 40 and schedule No. 80. In addition, special OD and ID (or wall thicknesses) tubing or custom extrusions are available.

(Carlton "V" plastic pipe is a product of Carlton Products Corp., Dept. CP, 10225 Meech Ave., Cleveland 5, Ohio . . . or for more information check CP 6324 on convenient Reader Service slip located between pages 2 and 3.)

Quick drying properties of coating provide labor savings . . .

permit finish coat to be applied 15 minutes after primer

Uses: As a rust-inhibitive finish for metal, brick, cement, and wood surfaces.

Features: Material dries so rapidly that the finish coat can be applied 15 minutes after the prime coat. This is said to result in a considerable saving in labor. Fact that paint works well with roller application also reduces labor costs.

Description: Totrust Instant Dry Enamel has as its base manufacturer's rivial vehicle, which is a combination of rubber, Vinyl, and alkyd resin. Material is said to withstand most chemical fumes and to be heat-resistant up to 250°F.

(Coating is product of The Wilbur & Williams Co., Dept. CP, 130 Lincoln St., Boston 35, Mass. . . . or for more information reader may simply check CP 6325 on convenient Reader Service form, located between pages 2 and 3.)

How Nickel Protects Saran Purity

...from wet polymer
to
finished plastic

As a finished product, saran is a wonderful material—it's inert to most oils and chemicals at room temperatures—has high tensile and impact strength.

But it must be handled gently in certain stages of production.

The manufacturers of the saran powder found that out in the processing . . .

As a wet polymer it is sensitive to many metals and may turn yellow when it comes in contact with them. The chemical company which makes the powder found a solution to this problem in specially designed blenders made of nickel.

Then the manufacturers of saran-molded products discovered that certain metals catalyze the decomposition of the material. They too

found that they could guard against this and protect the purity of the hot plastic by using nickel and Inco Nickel Alloys for all parts the plastic came in contact with.

And when the extruders found that the hot saran was corroding their equipment, they turned to tough Duranickel for cylinder liners, screws, dies and other parts.

Perhaps you, too, have a problem of purity-protection or corrosion. If so, why don't you write Inco's Corrosion Engineering Section and tell them your problem. They'll be glad to help you.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

Inco Nickel Alloys

**MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL
"S"® MONEL • INCONEL® • INCONEL "X"®
INCONEL "W"® • INCOLOY® • NIMONIC® ALLOYS • NICKEL
LOW CARBON NICKEL • DURANICKEL®**



When inquiring check CP 6326 on handy form, pgs. 2-3



Saran molding powder is mixed and made ready for shipment in nickel blenders designed and manufactured by Industrial Process Engineers, Newark, N. J. The 220 cu. ft. blenders have conical sections of solid nickel and nickel-lined cylindrical sections. Nickel was used because other metals have proved detrimental to the quality of the plastic.



ALCOA Aluminas are remarkably versatile . . . sort of "Jack-of-all-Trades" for process industries. And hard workers they are, too—increasing production, improving quality, reducing costs wherever they're put to work.

CATALYTIC PROCESSES—There are ALCOA Activated and Tabular Aluminas to upgrade your catalytic process yields and reduce losses from contamination and side reactions.

BED-SUPPORTS—If you have a bed-support or cover problem, ALCOA Tabular Alumina Balls are chemically and thermally stable, and catalytically neutral. They offer economy, adaptability and better operation of your reactor towers.

DRYING APPLICATIONS—What do you dry and how dry do you want it? ALCOA Activated Aluminas are the oldest, most thoroughly proved desiccants for the dehydration of liquids, gases and vapors.

REFRACTORIES—What temperature does your process require? Refractories fortified with ALCOA Aluminas withstand the highest temperatures . . . last the longest. And this performance improves as the ALCOA Alumina content increases.

Perhaps one of the ALCOA Aluminas holds the answer to your processing problems. Why not find out? Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 705-B Alcoa Building, Pittsburgh 19, Pa.

ALCOA 
CHEMICALS

ALUMINUM COMPANY OF AMERICA

When inquiring check CP 6327 on handy form, pgs. 2-3

CORROSION

Corrosion-resistant tanks made of flat stock fiberglass . . .

combines light weight and long wearing qualities in wide size range

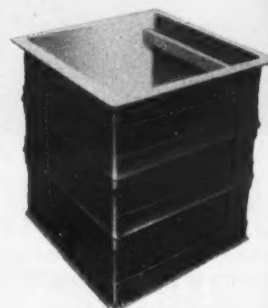
Uses: As non-corrosive, electrically non-conductive containers.

Features: Tanks may be fabricated in any size to meet exact requirements and can be equipped with dam overflow and fittings. Smooth interiors can be impregnated with various permanent colors.

Description:

Containers are light weight (2 x 2 x 3' tank weighs about 60 lb) and easy to clean and repair. They resist chemical attack from all commonly used acids in normal concentration and withstand temperatures above boiling point. Walls of uniform thickness, reinforced with horizontal ribs where necessary, register high impact resistance.

(Tanks are product of Laminex Corp., Dept. CP, 994 Jefferson St., Fall River, Mass. . . or for more information check CP 6328, pages 2 and 3.)



Made of flat stock fiberglass

Corrosion-resistance furnished by pulverized aluminum-plastic coating . . .

surface can be bent to a 45° angle without cracking or chipping

Uses: Material is said to be satisfactory as a coating for the interiors of all types of tanks. It is also suitable for acid cooling coils, structural iron and steel, ducts and piping, and a variety of industrial equipment.

Features: Laboratory tests have shown coating to have excellent resistance to atmospheric and sea water corrosion. It retains its finish and firm adhesion over a wide range of temperatures and demonstrates inertness to a large number of chemicals. Surface can be polished, ground, drilled, or bent to a 45° angle without cracking or chipping.

Description: Material, which is called Kolmetal, is a mixture of finely pulverized aluminum in a plastic base. Two applications of product are made with a four hour drying time between them. Material hardens to a plastic bonded aluminum surface.

(Coating is development of Emjay Maintenance Engineers, Dept. CP, 327 Union Ave., Rutherford, N. J. . . or for more information check CP 6329 on handy form, pages 2 and 3.)

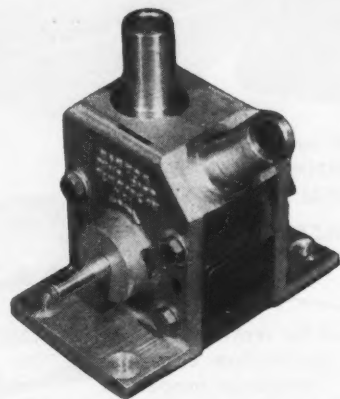
CORROSION

No contamination in corrosive service with stainless steel pump . . .

self-priming design eliminates stuffing boxes, gaskets, and internal check valves

Uses: For pumping a variety of chemicals and foods.

Features: Pump is particularly adaptable for extreme corrosive service and for handling of liquids or slurries where contamination cannot be



For extreme corrosive pumping service

tolerated. Self-priming design eliminates stuffing boxes, gaskets, and internal check valves.

Description: Only parts of "S" series pump in contact with fluid are the stainless steel body block and corrosion-resistant flexible liner. Materials in which flexible liner may be furnished include gum rubber, natural rubber, Buna N, Hycar, Neoprene, vinyl, silicone, and Compar.

Pump is available in capacity ranges from 1/3 to 20 gpm and discharge pressures from 0-60 psig, with suction lifts up to 26" Hg.

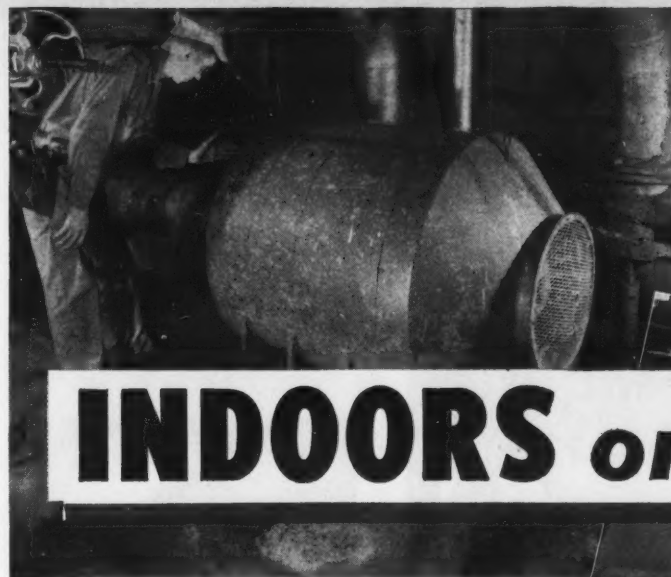
(Series "S" stainless steel pumps are product of Vanton Pump Corp., Dept. CP, Empire State Bldg., New York 1, N. Y. . . . or for more information check CP 6330, pages 2 and 3.)

Bulletins describe corrosion resisting valves

Manufacturer's valves fabricated from stainless steel or other corrosion-resistant alloys are described in two bulletins. First bulletin, Sec A, illustrates and explains features of nine different types of needle valves in 10 pages.

Second bulletin, Sec E, of 16 pages, covers a number of different types of safety and relief valves made of corrosion-resisting metals.

Bul on valves, Sec A and Sec E, are issued by Associated Valve & Engineering Co., Dept. CP, 1150 W. Marquette Rd., Chicago 21, Ill. When inquiring specify CP 6331, pages 2 and 3.



Totally-Enclosed
Fan-Cooled
MOTORS

INDOORS or OUT

DIRT and CORROSION

Can't Hurt These Motors

Here is a totally-enclosed type of motor that will solve many of your dirt and corrosion problems. Install anywhere, indoors or out.

Cooling System is Self-cleaning

Cooling air is carried through the heat-exchanger tubes with sufficient velocity to expel practically any kind of dirt. If oily or sticky dirt should cling, tubes can be ramrodded clean in a few minutes because tubes are straight and tube ends are exposed.

Choice of Corrosion-resistant Materials

You can lick corrosion with this motor, too. Tubes are available in a variety of materials to meet practically any corrosive atmospheric condition. Allis-Chalmers tube-type motors have long and successful experience in such difficult applications as caustic plants, refineries and petrochemical plants, power plants with fly ash problems and many others.

Next time you need a motor for a dirty or corrosive location or for outdoor operation in all kinds of weather, call your Allis-Chalmers District Office. Get complete information on Allis-Chalmers tube-type totally-enclosed, fan-cooled and explosion-proof motors. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B7149. Available in ratings on frames larger than NEMA 505 up to 3000 hp.

A-4222

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS

When inquiring check CP 6332 on handy form, pgs. 2-3

Sold . . .

Applied . . .

Serviced . . .

by Allis-Chalmers Authorized Distributors, Certified Service Shops and Sales Offices throughout the country.



CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE V-belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

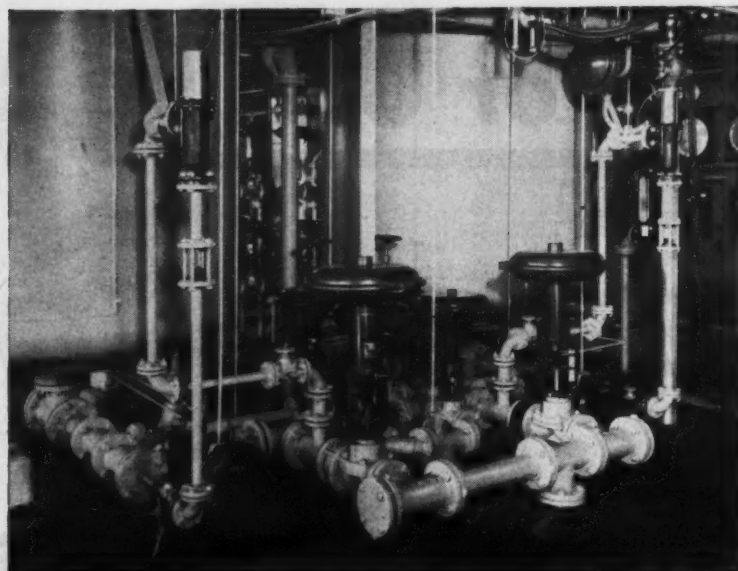


PUMPS — Integral types from 3/4 in. to 72 in. discharge and up.



CORROSIVE LIQUIDS CAN'T HURT THIS INSTALLATION

Large midwest corn processor installs SARAN lined pipe, fittings and valves



When one of the largest processors of corn in the midwest was faced with the problem of handling corrosive liquid safely and efficiently in an ion exchange system, they investigated saran lined pipe and fittings.

They learned that saran lined pipe fittings and valves assure tight, leakproof joints. They were convinced that the excellent corrosion resistance of strong, rigid saran lined pipe would mean longer service and greater dependability. The sum total of advantages offered by

saran lined pipe indicated that it would meet the company's demands for equipment that would assure uninterrupted processing free from the expense and inconvenience of unscheduled "shut-downs." Wherever piping with unusual resistance to most chemicals and solvents is involved, install saran lined steel pipe. It can be easily cut and threaded in the field without need for special tools or handling; costly downtime can be reduced to a minimum. We'll be glad to assist you with installation plans. Write or call the Saran Lined Pipe Company, Ferndale, Michigan. Offices in New York • Boston • Pittsburgh • Tulsa • Philadelphia • Chicago • Portland • Indianapolis • San Francisco • Houston • Salt Lake City • Los Angeles • Seattle • Cleveland • Charleston, S. C. • Toronto • Montreal

RELATED SARAN PRODUCTS

Saran rubber tank lining • Saran rubber molding stock • Saran pipe and fittings Saran tubing and fittings

Saran Lined Pipe Company 1163B
2415 Burdette Ave., Ferndale, Mich.

Please send me a copy of your catalog on Saran Lined Pipe, Valves and Fittings.

Name _____

Title _____

Company _____

Address _____

City _____ State _____

SARAN LINED PIPE COMPANY

2415 BURDETTE AVENUE, FERNDALE, MICHIGAN

When inquiring check CP 6333 on handy form, pgs. 2-3

CORROSION

Raschig rings and discs give support under corrosive conditions . . .

favorable factor is that rings can be reclaimed

Uses: As tower packing for refluxing, scrubbing, and contacting process materials.

Features: Rings and discs can be used where extreme corrosive conditions prevail. They can also



Corrosion-resistant Raschig rings

be reclaimed or recycled by the use of any inorganic material or acid.

Description: Corrosion resistant Raschig rings and perforated plates or discs in thicknesses up to one inch and over are made of Kel-F. Various sizes of holes and perforation patterns are available to meet specific requirements.

(Kel-B Raschig rings and discs are product of United States Gasket Co., Dept. CP, 608 N. 10th St., Camden, N. J. . . or for more information reader may simply check CP 6334 on convenient Reader Service slip located between pages two and three.)

Advantages of light-wall stainless steel piping

Cost-saving advantages obtained through use of manufacturer's light-wall stainless steel fittings are pointed out in 4-page bulletin. Speedline fittings are said to decrease assembly time, reduce installation costs, and provide tight, leak-proof joints.

Bul S11 is issued by Horace T. Potts Co., Dept. CP, Erie Ave. & D St., Philadelphia 34, Pa. When inquiring specify CP 6335 on handy form, pages 2 and 3.

Ceilcrete

a stonelike corrosion proof trowelled on surface



✓ ACID PROOF
✓ ALKALI PROOF
✓ SOLVENT PROOF

**TOPPING for FLOORS • WALLS
ACID HOLDING TANKS • WASTE
DISPOSAL SYSTEMS, ETC.**

THE CEILCOTE COMPANY
4832 Ridge Road, Cleveland 9, Ohio

**Send for technical data
on its application, corrosion
resistance properties**



When inquiring check CP 6336 on handy form, pgs. 2-3



**Complete records of: Areas painted;
Dates; Brands used; Quantities;
Costs; Durability**

KNOW YOUR PAINT COSTS

FREE BOOK

makes it easy!



Put your industrial maintenance painting on a business-like, cost-and-performance basis. With this free, file-size, 24-page record book it's easy to have a complete history of every painting job on buildings and equipment for years to come. No more guesswork. It becomes your guide to better painting—and saving money! *Your business letterhead request brings your free copy, without obligation. Write today!*

THE TROPICAL PAINT & OIL COMPANY

1128-1288 W. 70th • Cleveland 2, Ohio

HEAVY-DUTY MAINTENANCE PAINTS SINCE 1883

When inquiring check CP 6337 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Resistance to most inorganic acids, alkalis furnished by flexible transparent plastic tubing . . .

also resistant to many organic chemicals

Uses: Suggested uses include chemical laboratory tubing applications, piping systems, electrical insulation, battery tubing, hose for insect or paint sprayers, air lines, and instrument tubes.

Features: Tubing is highly resistant to most inorganic acids and alkalis, and is resistant to many organic chemicals. It is said to be ideal for permanent fluid lines

where easy-to-handle, sturdy, flexible tubing is required. Material is inert, odorless, non-toxic, and ages well. It is light, abrasion-resistant, kink-resistant, and retains its clear transparency throughout life. Smooth, non-tacky finish facilitates cleaning. If desired, tubing may be steam sterilized.



Plastic tubing is kink-resistant

Description: Ace-Flex tubing is easy to assemble. It can be connected to plastic fittings by dipping in soapy water and slipping over fitting. Ketone type cement may be used to weld permanent joints. Hose clamps may also be used, though usually not necessary.

Standard sizes are available with inside diameters ranging from 0.120 to 1". Special formulations can be developed to meet specific conditions. Special sizes and colors are available.

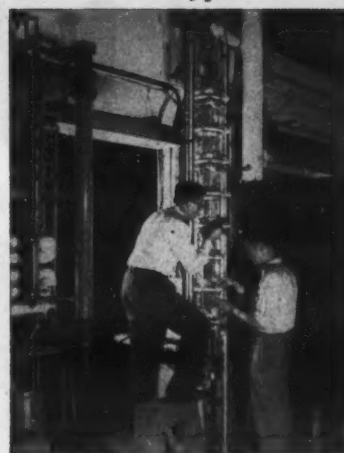
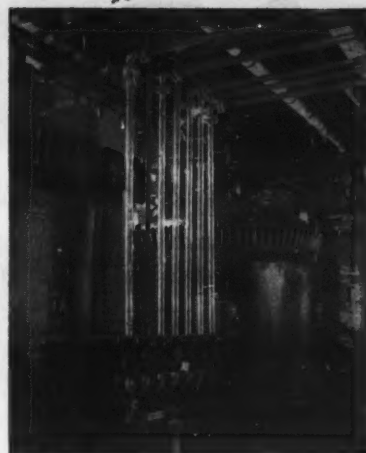
(Ace-Flex tubing is product of American Hard Rubber Co., Dept. CP, 93 Worth St., New York 13, N. Y. . . . check CP 6338, pages 2 and 3.)

Safe handling of LP gas outlined

Growing popularity of liquefied petroleum gas has prompted safety engineers of Association of Casualty and Surety Companies accident prevention department to publish pamphlet to show how inherent hazards of LP gas can be controlled.

The 60-page pamphlet combines information of eight previously issued pamphlets. It describes composition, properties and behavior of the gas and gives detailed information on its storage and handling at domestic, industrial, utility and bulk distribution stations. It also covers transportation and distribution of LP gas from producer to consumer and its use as fuel for automotive vehicles. Five tables and diagrams are for use in computing maximum liquid volumes and filling densities.

"LP Gas-Safe Handling and Use" is available by remitting 25 cents to Ass'n. of Casualty & Surety Co., Dept. CP, 60 John St., N. Y. 38, N. Y.



Have YOU a corrosion problem one of these glass products can cure?

Corrosive liquids create special problems. Your pipes, coolers, and fractionating columns forever need attention, repairs or replacement. Product contamination is common. There's

no fast, sure method of cleaning corroded equipment.

Why put up with these headaches when you can easily avoid them with PYREX brand glass equipment?

These are reasons why glass takes the headaches out of corrosive liquids:

1. *Glass does not rust . . .* It's unaffected by all acidic solutions and acids except hydrofluoric.
2. *Glass is non-contaminating . . .* The high chemical stability of PYREX brand glass equipment assures product purity.
3. *Glass is transparent . . .* You see what's happening as it happens. You have an immediate visual check on conditions within the equipment.
4. *Glass is easy to clean . . .* There's no place for deposits to build up on its hard, smooth surface.
5. *Glass is strong . . .* PYREX brand glass No. 7740; used for pipe, cascade coolers, and towers, has great physical and thermal shock resistance.
6. *Glass is economical . . .* Installation is simple. Maintenance is negligible. You will find the initial and maintenance costs of PYREX equipment low.

It will cost you nothing to find out if PYREX brand glass equipment can help you. And finding out may bring important savings. Write, wire, or phone the nearest Corning plant equipment distributor listed below. Or mail the coupon.

Far Left: PYREX brand "Double-Tough" Glass Pipe ends replacement of corroded lines . . . simplifies cleaning . . . enables you to see what's happening inside the line.

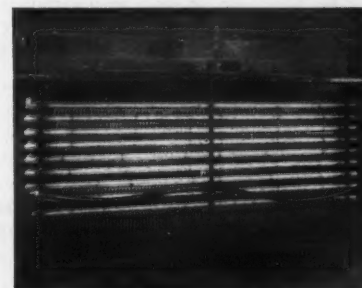
Available in 1" to 6" I. D. with all standard fittings, as well as sink traps. Your plant personnel can handle PYREX pipe without special training.

For information and pictures, check the coupon below for "PYREX brand Glass Pipe in the Process Industries" (EA-1) and "PYREX brand 'Double-Tough' Glass Pipe and Fittings" (EA-3).

Left: PYREX brand Fractionating Columns give you unusual advantages in solving fractionating and absorption problems. No corrosion, no contamination. And you see flow, performance and condition of product.

Available in 4" and 6" sizes with any number of plates.

Standard packed columns are available in 4", 6", 12" and 18" inside diameter sizes. Can be packed with PYREX brand Glass Ratchig Rings. Check the coupon for data sheet of helpful information and applications.



Above: PYREX brand Cascade Coolers give you low cost per BTU transferred, plus low cost operation. As many as 40 tubes can be stacked vertically in a single unit (20 tubes under one trough) to meet varied requirements. You can use cheap river or sea water as the coolant.

Check illustrated bulletin (PE-8) on the coupon for complete information on PYREX brand Cascade Coolers. It demonstrates why PYREX tubes provide high heat transfer.

DISTRIBUTOR LIST

BELMONT, CALIFORNIA	Glass Engineering Laboratories
FRESNO 17, CALIFORNIA	Valley Foundry & Machine Works
NEW HAVEN, CONNECTICUT	Macalaster Bicknell Company
ATLANTA, GEORGIA	Southern Scientific Company
CHICAGO 44, ILLINOIS	Fred S. Hickey, Inc.
NEW ORLEANS, LOUISIANA	W. H. Curtin & Company
CAMBRIDGE 39, MASS.	Macalaster Bicknell Company
ST. LOUIS 4, MISSOURI	Stemmerich Supply, Inc.
LODI, NEW JERSEY	Mooney Brothers Corporation
ALBANY 5, N. Y.	A. J. Eckert Industrial Sales Corporation
BUFFALO 13, N. Y.	Buffalo Apparatus Co.
ROCHESTER 3, N. Y.	Will Corporation
HATBORO, PA.	Sentinel Glass Company
PITTSBURGH 19, PA.	Fisher Scientific Company
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MONTREAL 3, QUEBEC, CAN.	Fisher Scientific Company, Ltd.
VANCOUVER, B. C., CAN.	Scientific Supplies



Corning means research in Glass

CORNING GLASS WORKS

Dept. CP-2, Corning, N. Y.

Please send me the material checked below:

"PYREX brand 'Double-Tough' Glass Pipe and Fittings Catalog" (EA-3) ☐

"PYREX brand Glass Pipe in the Process Industries" (EA-1) ☐

"PYREX brand Cascade Cooler Bulletin" (PE-8) ☐

Data sheet on Fractionating Columns ☐

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

When inquiring check CP 6340 on handy form, pgs. 2-3

CORROSION

Columbium stainless steel No. 20 Included in alloys removed from restriction . . .

can be used for applications which involve welding during fabrication

Included in alloys removed from BDSA controls is Columbium-bearing stainless steel No. 20. This alloy is for those applications which involve welding during fabrication and those in which part must be placed in service in the as-welded condition. Typical applications include mixing tanks, heat exchangers, processing piping, metal cleaning tanks, and pickling tanks. Addition of Columbium to alloy minimizes precipitation of carbides during welding. Columbium content is eight times the carbon minimum of .07%.

(Stainless No. 20 with Columbium is available in tubing, pipe, sheet, and plate from Alloy Tube Div., The Carpenter Steel Co., Dept. CP, Union, N. J. . . . or for more information on manufacturer's product, reader may simply check CP 6341 on convenient Reader Service slip located between pages two and three.)

Surfaces of stainless steel thermometer are smooth, corrosion-resistant, and non-contaminating . . .

stem and nut are joined into single unit by welding process

Uses: For applications in the chemical, petroleum, food, drug, and other industries.

Features: All external parts are stainless steel. Stem and nut are joined into a single unit by a stainless steel welding process. Thus, instrument surfaces are smooth, corrosion-resistant, and non-contaminating. Six inch dial chamber is hermetically sealed. Each instrument undergoes a rigid

submersion test in final inspection. An external recalibrating device makes it possible to reset pointer easily without breaking seal.

Description: Model 1850 straight form thermometer can also be supplied with stem at any angle to the dial face. It can be obtained with stem lengths from 2½ to 48", and covering temperatures ranging from -90 to 1000°F. An oscillation-dampening device gives smooth pointer action.

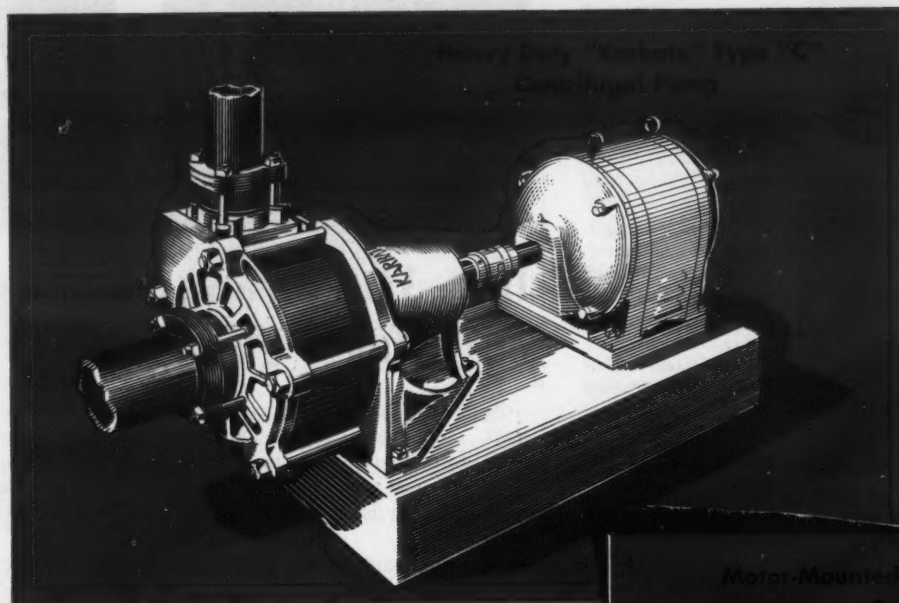


Has hermetically sealed dial chamber

(Model 1850 thermometer is product of Rochester Mfg. Co., Dept. CP, 86 Rockwood St., Rochester 10, N. Y. . . . or for more information reader may simply check CP 6342 on the convenient Reader Service slip located between pages two and three.)

WANT THE BEST...

FOR ALL CORROSIVE SERVICES?



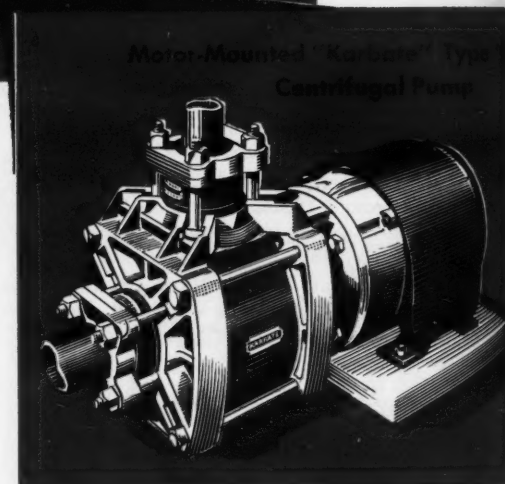
NEW DESIGNS...

IMPROVED PERFORMANCE!

- ★ Mechanical seal with enclosed coolant
- ★ Rugged Type SN armored connections
- ★ Maximum interchangeability of parts
- ★ Wide capacity range
- ★ Separable impeller and pump shafts

Offering peak performance at low cost, National Carbon's improved, general-purpose, "Karbate" brand centrifugal pumps banish operating troubles wherever corrosion is a factor.

Completely resistant to practically all corrosives over a wide temperature range, "Karbate"



impervious graphite is here applied in pump constructions which will give you years of trouble-free service. Ruggedly built, these pumps stand up under even the toughest conditions, virtually eliminate pump down-time.

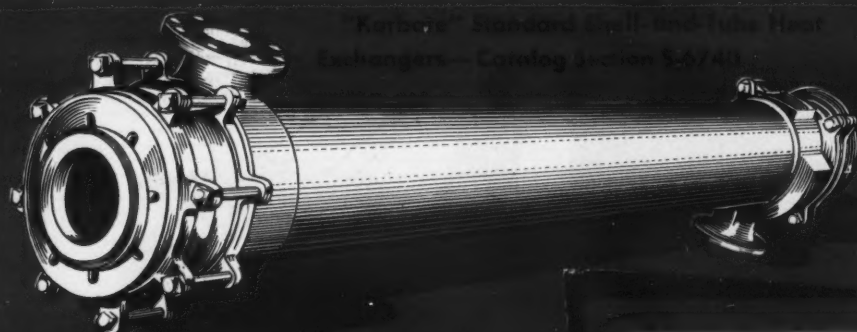
WRITE FOR CATALOG SECTION S-7250



T...GET "KARBATE"

BRAND

IMPERVIOUS GRAPHITE PROCESS EQUIPMENT



"Karbate" Standard Shell-and-Tube Heat Exchangers—Catalog Section S-6740

WHEN you select pumping, heat-exchange and conveying equipment, you want the *material* best for the service and a *design* which is simple, rugged and flexible in application.

When you select "Karbate" impervious graphite process equipment, you know where you stand on *both* points—unparalleled corrosion resistance... top quality designs.

Add a competent technical service department, ready to help you put these products to work in *your* process, and you know you're set — *with the best!*

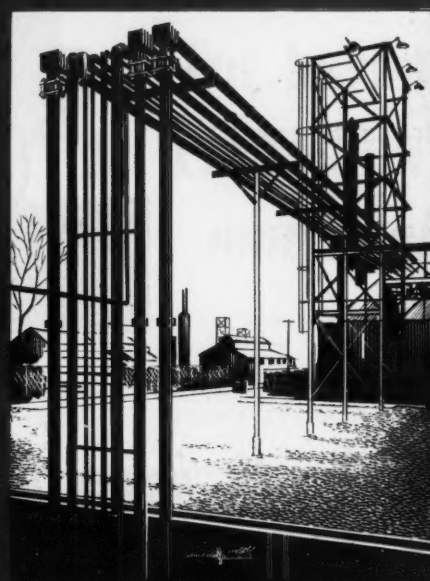
WRITE FOR LITERATURE TODAY!

The term "Karbate" is a registered trade-mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco



"Karbate" Pipe and Fittings—
Catalog Section S-7000



GRAPHITE EQUIPMENT FOR
CHEMICAL PROCESSING

CORROSION

Chemical-resistant, high impact pipe and fittings

Availability of high chemical-resistant and high impact rigid polyvinyl chloride pipe is announced by manufacturer. Nominal pipe sizes from 1/2 to 4" can be furnished. Molded fittings for pipe up to 2" IPS and fabricated fittings for larger sized pipe can be supplied. High chemical-resistant pipe is known as Ampcoflex and high impact pipe as Pee Vee Cee.

(Piping is product of The Atlas Mineral Products Co., Dept. CP, Mertztown, Pa. . . . or for more information check CP 6344, pages 2 and 3.)

Single coats of 20 mils thickness permitted with spray-applied thermosetting coatings . . .

no sagging is encountered in spite of thickness of chemical-resistant film

Uses: Since these coatings have been available, they have been used for tank and duct lining work in the plating industry. According to manufacturer, coatings can be used to protect many other types of equipment in the chemical, pharmaceutical, metal working, food, and beverage industries.

Features: This series of coatings is said to permit spray application of films of much greater thickness than have been obtainable in the past. At room temperature, coatings can be applied to cold vertical surfaces to produce single coat dry films up to 20 mils thick. Even at these unusual thicknesses, practically no sagging is encountered.

Description: Since Unichrome 5300 Coatings are based on thermosetting resins, they require a short bake at 350°F. They cannot be air-dried. A special primer is usually applied before the coating. Strong mineral acids, such as hydrochloric and sulfuric, alkalis, water, salt solutions, oxidizing and reducing agents, and many wetting agents do not attack the coatings. Special formulations can be supplied that are odorless, tasteless, and non-toxic.

(Unichrome 5300 Coatings are product of United Chromium, Inc., Dept. CP, 100 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 6345 on handy form, pages 2 and 3.)

If you're after a coating or special material to solve a corrosion problem . . .

try looking in the alphabetical Product Directory on page 221 to 224. Your Editors started this service many years ago, to make it easy for you to locate your interests in each issue.

When inquiring check CP 6343 on handy form, pgs. 2-3

DESIGNED AND MANUFACTURED BY
Palmer Shile Co.
16016 FULLERTON AVE., DETROIT 27, MICH.

A well-equipped maintenance shop staffed with intelligent, cooperative maintenance men helps insure dependable, low-cost truck operation. Here, maintenance man gives periodic lubrication to equipment, records it on report sheet

A well-equipped maintenance shop staffed with intelligent, cooperative maintenance men helps insure dependable, low-cost truck operation. Here, maintenance men gives periodic lubrication to equipment, records it on report sheet

Systematic inspection and repair of industrial trucks help preventive maintenance pay off

Accurate records of periodic service aid detection of "traps" in materials handling program

An effective, workable preventive maintenance program which assures users of industrial trucks maximum operational efficiency is offered by a large industrial truck manufacturer. Although prepared specifically for operators of electrical industrial trucks, many of the rules in the report concern gas powered units as well.

Of primary importance is the question of authority. Many good maintenance systems have never fully materialized because production departments will not permit trucks to be pulled out of service for repairs. This results in increased operating costs.

Two possible solutions to this problem are 1) provide a standby truck which can be placed in service while inspection and repairs are made, or 2) permit the maintenance department to work different shifts than the production departments. Although either of these solutions cost money,

INSPECTION REPORT	
Electric Platform Truck	
Schedule A 50 Hours or Weekly	
TRUCK NUMBER	NAME
DATE THIS REPORT	DATE LAST REPORT
ENGINE HOUR METER READING	DEPT.
TRUCK CAPACITY	SPECIAL ATTACHMENTS
NO. CHECK POINT	Check
NO. CHECK POINT	Check
TRUCK REPAIR ORDER DATE TRUCK NO. NAME SERIAL NO. DEPT. LAST PREVIOUS INSPECTION DRIVER'S COMPLAINT REPAIR INSTRUCTIONS SIGNED _____ Date and Material Used Labor Required Part No. Qty. Description Price Cost Date Shop Name Name REPAIR PAID Qty. Date DAILY TRUCK REPORT TRUCK NO. DATE SHIFT OPERATOR DEPARTMENT Check O.K. Ref. Check O.K. Ref. TOTAL TOTAL Brakes Feet Brakes Tires Bearings Holes Controller Tilt Fuel SIGNED _____	

Three suggested forms for keeping accurate, helpful records on servicing industrial trucks. Daily Truck Report by operator at start of each shift aids maintenance department in checking truck condition. Inspection Report issued at specified intervals is basic essential to any workable preventive maintenance program. Truck Repair Order simplifies recording of labor and parts costs, will help ferret out weak spots in program

many plants have found that reduced truck maintenance has made up the difference many times over.

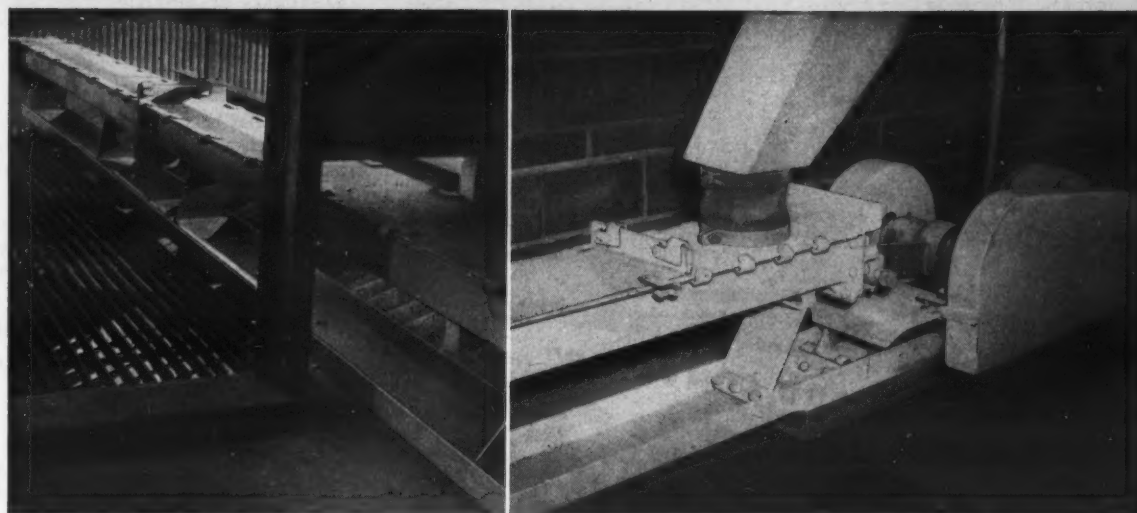
Where an incentive system is in operation, the inclination to overlook correct preventive maintenance in favor of continued production should be guarded against.

Competent Maintenance Men

Without the proper attitude, maintenance men can cause more harm than good. With regard to electrically operated industrial trucks, three general attitudes have been discovered among those who service trucks. 1) Fear of electrical equipment. If the maintenance man will learn basic facts required and then follow up his knowledge, electrical equipment is simple to handle and keep in perfect operating condition.

2) The maintenance man who contemptuously regards hydraulics and electricity as too simple to require any thought on his part. He feels that

(Continued on next page)



Left: 57-ft. long Flexmount Oscillating Conveyor with multiple dust-tight discharge gates, distributing material to storage bins. Right: Compact, feed-end-drive assembly of Flexmount Oscillating Conveyor.

For hard-to-handle materials... get FLEXMOUNT Oscillating Conveyors now available from stock

If you need conveyors in a hurry, stop in at your nearby Link-Belt sales office or distributor. Under a new policy, they can offer you stock sections of Link-Belt FLEXMOUNT Oscillating Conveyors. Available in 8, 12 and 18 in. trough widths, they can be combined to make any length desired with no delay for engineering.

The gentle, uniform flow provided by FLEXMOUNT makes it a natural for moving a wide range of difficult-to-handle materials. And you

can utilize the free testing service offered by Link-Belt. With complete laboratory facilities and test units, our engineers can quickly determine whether FLEXMOUNT can serve your requirements.

Or, if your product is one of those listed at right, it means that Link-Belt FLEXMOUNT Oscillating Conveyors have already been successfully applied on this material. Ask your Link-Belt representative for a copy of Book 2478 containing application and selection information.

How Positive Action moves materials



Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle up-

ward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to a minimum.

LINK-BELT
FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

LINK-BELT Flexmount Oscillating Conveyors handle many materials efficiently...

Aloxite	Glass, broken
Aggregates	Grains
Aluminum ore sinter	Grit
Aluminum oxide	Ilmenite ore
Asbestos, shredded	Licharge
Ashes	Links, chain
Bands, rubber	Milk, dried
Beans	Magnesium fluoride
Blades, steel	Manganese dioxide
Bolts and Nuts	Mica flake
Bottles, broken	Newspapers, bundles
Buttons	Nut meats
Calcine crystals	Packages
Carbon black, pelletized	Paraformaldehyde, dry
Carborundum	Parts, iron, steel and wood
Castings	Phosphate nodule dust
Clinker	Phthalic flakes
Clips, paper	Punch press scrap
Chrome ore	Resin
Chips, C. I.	Rubber pellets
Chips, steel	Salt
Clay	Sand, foundry
Coal	Sand and gravel
Cocoa beans	Saw dust
Coffee	Scale, mill
Cork	Shale, ground
Cotton seed	Slag
Cullet, glass	Shot, steel
Dolomite limestone	Slugs, steel
Dust collector fines	Stone, crushed
Felt	Sugar
Filter cake	Tanbark
Foundry sand	Turnings, steel
Fuel, hogged	Wood chips
Fullers Earth, spent	

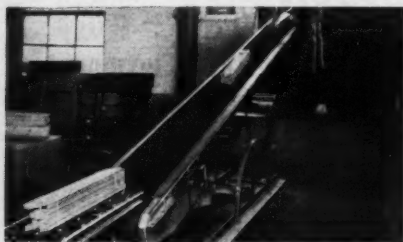
Heavy duty units available for larger capacities and heavy duty applications

When inquiring check CP 6347 on handy form, pgs. 2-3



On processing — inspecting — packing lines with roller and belt conveyors

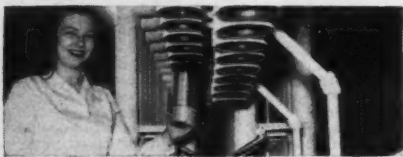
• Your needs in conveyors—ranging from power and gravity conveyors, roller, belt, slat, chain, pushbar, sectional—to portable, self-contained units—spiral chutes—pneumatic tube systems—can be best met at Standard with an experience record of more than 45 years at your service. Write—address Dept. CP-24.



In storage — shipping receiving depts. with a HANDIBELT

• Conveys horizontally or at any decline and incline angle within its range. Easy to wheel about or adjust—fits in crowded aisles, cars, freight elevators. Handles commodities up to 135 lbs. Can be placed in series to form a complete conveyor line. Available in 3 sizes and belt widths. Write for Bulletin No. 63-D—address Dept. CP-24.

For interdepartment communications and dispatch . . . pneumatic tube systems



• Provide swift, sure, safe transportation of messages, documents, blueprints, samples, small parts, money: cylindrical or oval tubes 1½ inch upward with dispatching and receiving terminals for complete systems to meet your needs. Write for special Bulletin SPT11—address Dept. CP-24.

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities

ROLLER • BELT • SLAT • CHAIN • WHEEL
PUSH-BAR • SECTIONAL

PORTABLE CONVEYOR UNITS:
HANDIBELT • HANDIPILER

INCLINEBELT • LEVEL BELT • EXTENDOVEYOR
UTILITY BELT-VEYOR • HANDI-DRIVE

GRAVITY & POWER
CONVEYORS VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

When inquiring check CP 6348 on handy form, pgs. 2-3

MATERIAL HANDLING

(Continued from preceding page)

since he has been able to repair anything by using a hammer, wrench and screwdriver, he ought to be able to maintain a simple electric truck in the same way.

3) The man who recognizes importance of electrical controls system controlled by definite principles for efficiency of modern mechanical equipment.

Importance of Lubrication

Importance of a regularly scheduled lubricating interval with the properly selected lubricants cannot be overstressed.

If the truck is of the hydraulic lift type, selection of the proper hydraulic oil is also of vital importance. It is also important to establish a regular inspection and adjustment schedule. Such a program will normally catch a minor equipment breakdown before it develops into a costly major failure. Frequency or interval of inspection and adjustment are governed by many factors unknown to the manufacturer.

These factors include: general conditions of floors or roadways; size and type of loads; atmospheric conditions; nature of the service cycle (long or short runs, amount of jockeying, actual hours of use daily); type of operator and whether truck is used by several operators; maintenance facilities available.

General Causes of Breakdowns

Here are a few of the principal causes of equipment failure and breakdown. Some of these, however, fall outside the jurisdiction of many maintenance or electrical departments: 1) neglect of minor repairs and inspection; 2) faulty lubrication; 3) overloading; 4) bad floor or roadway conditions; 5) careless operation by inexperienced or irresponsible operators.

Operators should be trained to report the following factors to their foreman or supervisor. These eight danger signs, if caught in time, can save costly repairs: 1) decrease in normal speed; 2) lack of power; 3) apparent lack of proper lubrication; 4) worn or damaged tires; 5) poor brakes; 6) missing parts such as hub caps, covers, or the like; 7) worn or partly broken wire ropes or chains, broken or bent operating rods, etc; 8) difficult steering.

It is not, of course, good policy to depend altogether on the operator's cooperation. A better plan is to schedule regular inspection and lubrication periods. A good, comprehensive maintenance schedule can be set up on a 50, 250, or 1000-hr basis for servicing, or weekly, monthly, and 4-months respectively. Equipment to be serviced should include general trucks, fork trucks, low-lift and high-lift platform trucks, cranes.

Accurate Records

A vital part of any effective preventive maintenance system is keeping accurate operating and repair costs. Through intelligent interpretation of these costs, it is possible to adjust the preventive

BIN STUCK LATELY?



"There is. Just use a CLEVELAND Vibrator for quick, efficient easy handling of your dry chemicals."



Catalog No. 109 on request



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 6349 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

maintenance program to eliminate failures before they occur. Records may also indicate need for better operator training program, changes in materials handling program to eliminate overloading, or other bad practices.

Scores of typical examples can be cited to show how accurate records have reduced operating costs. For instance, one plant with a high percentage of bent steering rods traced the difficulty to a bad railroad crossing. In another plant, maintenance records disclosed that operating cost for one make of truck was much higher than for another make, although both trucks were doing the same job. Further checking disclosed that the fault lay not with the supposedly inferior truck, but with the operator. He was replaced and operating costs fell into line.

Inexpensive Bookkeeping

A little planning, plus cooperation of the maintenance men whose job it will be to keep the records, will go far toward implementing such a system — on an economical basis.

Mechanics of the form will vary with respect to each company's setup, but it should contain certain basic information such as: 1) instruction space in which maintenance supervisor can indicate repairs to be made by the maintenance man; 2) a place for mechanic to indicate quantity and description of parts used, and 3) signature space for person responsible. Provision should also be made for compiling and totaling parts and labor costs of the entire repair job.

(Information supplied through cooperation of Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio . . . or for more information check CP 6350 on handy form, pages 2 and 3.)

Offer tips on materials handling for small plants' benefit

Written especially for small plants, 42-page Government booklet, 6 x 9", is designed for improving materials handling.

Significance of materials handling, methods of recognizing areas which need attention, evaluating possible materials handling equipment, proper layout of plant for reduced materials handling costs are a few of the topics covered.

Other subjects include how to improve materials handling at machines, safety in materials handling, factors to be considered in selecting handling equipment, how to get the most from materials handling equipment, and sources of additional information.

For a copy of "Improving Materials Handling in Small Plants" (Small Business Management Series No. 4), remit 20 cents to Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. In lots of 100 or more copies, mailed to a single address, discount 25%.

You can't compete if your equipment is obsolete!

With business conditions more competitive, it is more important than ever to analyze your production costs . . . your handling methods . . . your tools and equipment.

Obsolete methods and equipment take a heavy toll by slowing down production, increasing manhours and increasing repairs and maintenance. Material handling equipment in many plants is the key factor in efficient production — the pace setter for the entire plant. That is why it is so important to keep raw materials *on the move* in and out of the plant, to and from processing machinery — with the most modern, efficient methods and equipment.

If you are not using "PAYLOADER" Tractor-Shovels at present, it will pay you to investigate this fast, flexible, versatile system that is producing outstanding economies in all sizes of plants throughout the nation.



If your plant is already "PAY-LOADER"-equipped, you'll be pleasantly surprised at the superior performance of the late model "PAYLOADERS". Although "PAYLOADERS" are built for years and years of dependable service,

constant research and engineering improvements keep "PAYLOADERS" out in front in design, construction and performance.

Now is the time to trade in obsolete equipment — to gear your plant to present day conditions — to assure profitable operation on existing or slightly lower sales volume. Your nearby "PAYLOADER" Distributor will be glad to discuss your material handling methods and provide a demonstration of this equipment. For his name and address write The Frank G. Hough Co., 744 Sunnyside Avenue, Libertyville, Illinois.



PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1920



When inquiring check CP 6351 on handy form, pgs. 2-3

Why they buy NEFF & FRY Storage Bins

In the photograph you see how the diagonal-ended staves of a Neff & Fry Storage Bin are laid up. They are grooved and beaded to lock together. Each course is encircled with as many galvanized steel rods as needed to withstand the thrust of the load.

Our bins (often termed silos or tanks) are used by scores of America's leading companies for handling more than 80 kinds of flowable bulk materials; notably, cement, coal, clay, grain, gravel, ore, sand, wood chips.

The reasons:

Formed under tremendous hydraulic pressure, the staves are rocklike in strength and density. They do not spill, rust, or burn.

Since the walls are only 2½" thick, the bins have great capacity in relation to outside diameter; no wasted ground area.

Despite the thin walls, the structures have sufficient load-bearing ability to carry heavy superstructures without additional supports.



Our wide experience enables us to make valuable suggestions regarding materials handling systems and equipment.

If you want to invest a few minutes in mighty profitable reading, ask for our folder, "Bins with the Strength of Pillars."

THE NEFF & FRY CO.

166 Elm St., Camden, Ohio

NEFF & FRY ▶ **SUPER-CONCRETE STAVE STORAGE BINS**

When inquiring check CP 6352 on handy form, pgs. 2-3

IN A FILTER OR STRAINER IT'S

*design
accuracy
craftsmanship*

FOR BETTER SERVICE

"CLEVELAND" FILTERS AND STRAINERS

No task too big — no problem too small for CLEVELAND strainers and filters. We design, build and produce strainers and filters for every purpose in any size or dimension or metal.

Easy to order — our engineers will help you to analyze your problem. Send us your requirements!

WRITE FOR BULLETIN NO. 7
THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 6353 on handy form, pgs. 2-3

MATERIAL HANDLING

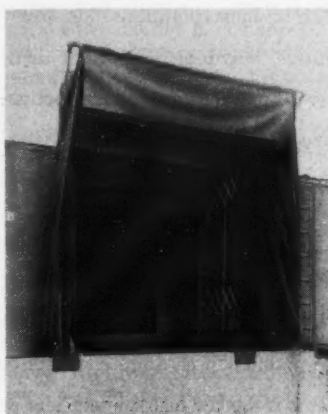
**Keeps material and men
protected from rain
and storm . . .**

shelter doubles as loading dock
for freightcars, trucks

Uses: As a loading dock shelter for use when conventional loading dock is not available.

Features: Provides complete protection to men and materials when unloading from boxcar into truck or vice versa.

Description: Model pictured is a combination of standard Scissor and Outtrigger dock shelters. Scissor part extends into boxcar



Can also be folded out of the way

where it is fastened securely; outtrigger fits snugly around the truck. Model is mounted on concrete abutment and can be folded together when not in use.

(Development of Atlas Industries, Inc., Dept. CP, 1300 W. Washington St., Chicago, Ill. . . . or for more information check CP 6354 on handy form, pages 2 and 3.)

Pictorial review gives info on conveyor uses

Pictorial presentation gives illustrated idea of wide applications of power driven conveyors.

Cat 1053 is issued by Sage Equipment Co., Dept. CP, 30 Essex St., Buffalo 13, N. Y. When inquiring specify CP 6355 on handy form, pages 2 and 3.

the ANSWER to lifting and dumping bottlenecks

ELIMINATE MANUAL LIFTING and speed up materials handling with a CESCO skip-hoist Dumper. Reduce handling time and costs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Up to 1500 lb. per load, 100 loads per hour. Easy, safe push-button control eliminates accidents.

**LIFTS AND DUMPS DRUMS, BOXES,
BULK, BAGS, MECHANICALLY**

ESSEX CONVEYORS, INC.
165 Franklin Ave. • Nutley 10, N. J.
COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, Calif.



When inquiring check CP 6356 on handy form, pgs. 2-3

1. Diaphragm
2. Counterweight
3. Switch

**THAT'S
ALL**

WORLD'S SIMPLEST BIN LEVEL INDICATOR BIN-DICATOR

NO MOTORS • NO SPRINGS • NO OILING

This is the first simple, dependable, low-cost automatic bin level indicator. Units installed 20 years ago are still in daily use. Watches and reports material levels in bins, silos, hoppers, chutes, etc.; automatically starts, stops filling machinery. Free catalog. Write—

THE BIN-DICATOR CO.

13946-D KERCHEVAL • DETROIT 15, MICHIGAN

When inquiring check CP 6357 on handy form, pgs. 2-3

CHEMICAL PROCESSING

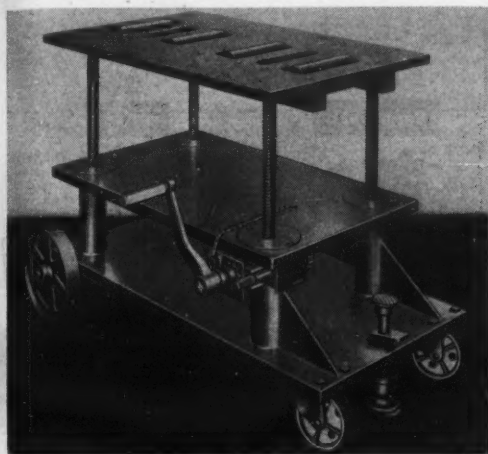
MATERIAL HANDLING

Heavy loads become light work when placed on mobile unit

Uses: For handling and positioning of heavy stock.

Features: Mobility allows unit to transport material from receiving dock to stock room for storage and to move material from stock room as needed for processing.

Description: Portelator table has 2000 lb capacity, vertical travel of 14". Minimum height



Has one ton capacity

from floor is 20", maximum height from floor is 34". Unit is elevated by hand crank from the side to permit extension of material over each end. Table surface of unit measures 18 x 20".

(Development of the Hamilton Tool Co., Dept. CP, East & Hanover Sts., Hamilton, Ohio . . . or for more information check CP 6358 on handy form, pages 2 and 3.)

Four-way flexibility, 2 1/2" pitch and strength of 37,500 lb are chain qualities . . .

no tools required to assemble or disassemble links for repair

Uses: For conveyor installations in handling boxes, cans, cases, barrels, crates of miscellaneous products.

Features: Drop-forged chain with 2 1/2" pitch has ultimate strength of 37,500 lb manufacturer reports.

Description: Duraflex conveyor chain is flexible in 4 directions, can turn in 30" radius. With no rivets and pins, chain can be assembled or disassembled without tools.

(Developed by Jervis B. Webb Co., Dept. CP, 8951 Alpine Ave., Detroit 4, Mich. . . or for more information check CP 6359 on pages 2 and 3.)

NEW BAKER "Yardloader" 4000 LB. GAS FORK TRUCK COSTS ONLY \$2985.00



Priced about 25% under any other gas trucks in its capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service

over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to \$1000.00 on your next gas fork truck.

Send in this coupon today.

THE BAKER-RAULANG COMPANY
1208 West 80th Street • Cleveland 2, Ohio

*The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Materials Handling and Construction Equipment*

TO THE BAKER-RAULANG CO., 1208 West 80th St., Cleveland 2, Ohio

Please send me information and specifications on the new Baker EY-40 Yardloader which sells for only \$2985.00.

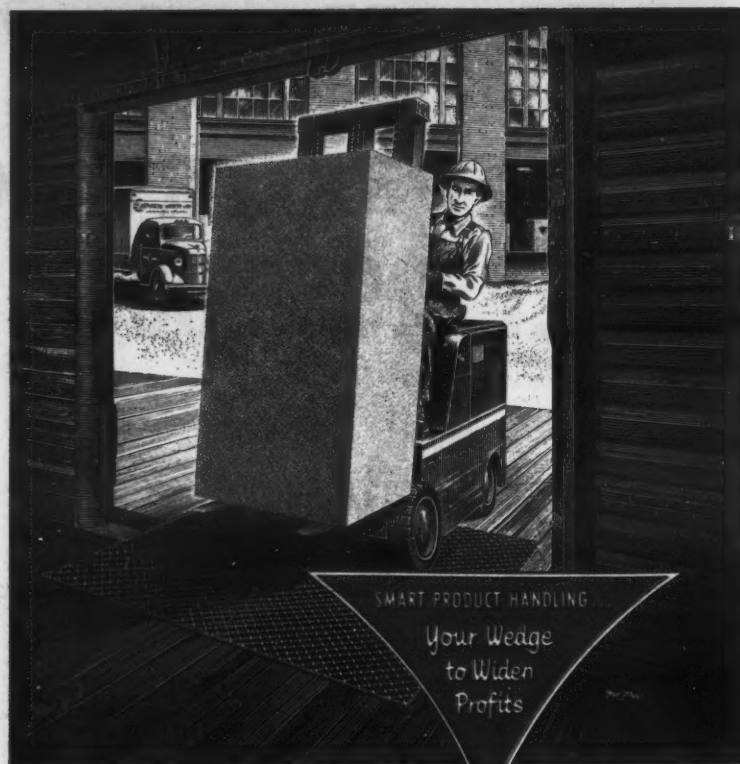
Name _____ Title _____

Company _____

Address _____

City _____ State _____

When inquiring check CP 6360 on handy form, pgs. 2-3



An Expensive Packing Problem Has Disappeared Inside This Gaylord Box

Over-all packing costs were too high. Loading and unloading of freight cars involved too much manual labor. Gaylord solved both these problems with a special box entirely new to the industry.*

Such new Gaylord ideas in corrugated and solid fibre containers may help make your packing and product handling methods as up-to-date as the rest of your plant.

From a ton load of bulk material to tiny tropical fish, the list of products shipped in boxes engineered by Gaylord's Research and Development Division grows larger every day.

For information on the newest developments in your field, call your nearby Gaylord office.

*Case history on request

Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.



SALES OFFICES
COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

MATERIAL HANDLING

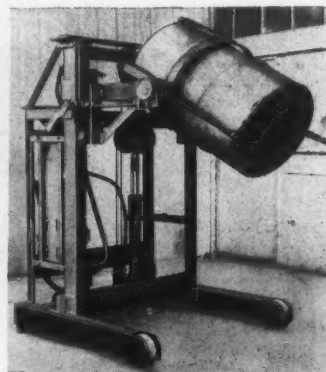
**Barrel handling, dumping
is safe and simple
with elevator . . .**

supplied with electro-hydraulic,
hand, or full electric power

Uses: For handling or dump-
ing of barrels or drums.

Features: Elevator illustrated
has electro-hydraulic power, but
unit is also available for hand or
full electric operation.

Description: Equipped with tip-
ping load bars, "Weld-Bilt" porta-
ble elevator is constructed of all-



Can also be had for hand or
full electric operation

welded channel steel. In use, the
drum or barrel is placed in the
drum cradle and secured with
threaded locking bars on the end
and a hooked chain placed around
the girth.

Tipping is accomplished by a hand
crank and worm gear which re-
volves the loaded cradle as shown,
or by chainfall and gear wheel
equipment. Jack-up type steering
control provides secure positioning.

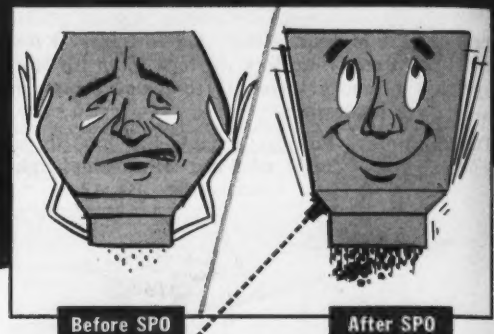
(Development of West Bend
Equipment Corp., Dept. CP, West
Bend, Wis. . . . or for more infor-
mation check CP 6361 on handy
form, pages 2 and 3.)

**As smooth as glass —
that's how batches
are handled . . .**

powered platform trucks feed
furnaces two-ton loads

Elimination of manual handling,
minimum manhours, and speedy
transfer are all realized by a large

SPO air vibrators FOR CLOGGED BINS



Before SPO

After SPO



1750-81

SERIES 81

Keep bulk materials in bins, hoppers
and chutes jam-free with SPO pneu-
matic vibrators. These dependable,
powerful, low cost units feature full-
power starting, high-speed operation
and a long trouble-free
service life. Eliminate un-
necessary production bot-
tlenecks . . . get a steady
flow with SPO vibrators.

Write for Bulletin 50 for complete details.



SPO INCORPORATED

6331 Grand Division Avenue • Cleveland 25, Ohio

When inquiring check CP 6362 on handy form, pgs. 2-3

NOW! Accurate Level Control with NO Maintenance!

Photoswitch Electronic Liquid
Level Controls have no vacuum
tubes — no floats — no moving
parts to wear out. So you are
sure of accurate level indication
and control . . . maintenance-free
for unlimited life. Electrolysis
is eliminated — probe voltage is
less than 1/2 volt A.C.

UNIVERSAL: pump up — pump
down — low level — high level!
Two probe rods are suspended
into a tank or vat of any size.
For a typical pump-up operation:
When liquid level falls below
lower probe, the control switches
on pump motor; when liquid
touches upper probe, control
shuts off motor. Learn more about
this money-saving process control
— write for Liquid Level Control
Bulletin CA-2



**PHOTOSWITCH
INCORPORATED**

77 Broadway, Cambridge 42, Mass.

Offices in all principal cities

When inquiring check CP 6363 on handy form, pgs. 2-3

CHEMICAL PROCESSING

ors
NS

hoppers
PO pneu-
dependable,
ture full-
operation

D

25, Ohio

pgs. 2-3

Mass.

pgs. 2-3

SSING



Here's the Solution to
**CONTAMINATION
PROBLEMS**

**BLAW-KNOX
Tight-Lip
BUCKETS**

● NOW you can handle granular fines without danger of contamination! Blaw-Knox Chemical and Fertilizer Buckets are equipped with tight fitting cast chrome-nickel-molybdenum alloy steel lips to stop leakage and resist abrasion. For a detailed description on all the important features, write for Bulletin 2236.

BLAW-KNOX COMPANY
Blaw-Knox Equipment Division
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

BLAW-KNOX CLAM-SHELL BUCKETS
FOR CHEMICAL AND FERTILIZER PLANTS

When inquiring check CP 6364 on handy form, pgs. 2-3



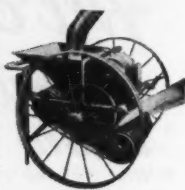
**Fill Cars
FASTER**

with an

S-A

**BOX CAR
LOADER**

One man, with an S-A Box Car Loader, can make quick work of loading and trimming a box car. The loader operates without attention after it is placed in the car, and flow of material is started. This handy machine automatically loads and trims in a fraction of the time required by hand methods. Exposure of operator to dust is reduced to a minimum. Save time and manpower with this standard S-A portable loader. . . Handles loose granular material up to 2-inch lump size. Mail coupon for bulletin 948.



STEPHENS-ADAMSON MFG. CO.
Standard Products Division
11 RIDGEWAY AVE., AURORA, ILL.
Please send me Bulletin 948
on S-A Box Car Loaders.

**MAIL
COUPON
FOR
FULL DATA**

Name.....
Company.....
Address.....
City.....Zone.....State.....

When inquiring check CP 6365 on handy form, pgs. 2-3

FEBRUARY, 1954

MATERIAL HANDLING

eastern glass bottle manufacturer employing powered platform trucks in a smooth batch handling system.

In the system, using four trucks of this type, batches of material are transported in cylinder-shaped containers from the mixing plant to the furnaces. The mix is deposited in a container which has been positioned under a discharge tank by one of the trucks. Loaded container is then transported a few feet through a door, thence about 50 yards across the yard to an alcove in the furnace in the glass-making building.

The full container is set down and an empty one is picked up for the return trip. Trucks make a trip every 2½ minutes carrying two tons of mix, plus the half ton weight of the container for a total load of 5000 lb.

While used in this instance for transporting batches for glass making, the system can be used for handling scrap, refuse, or other bulk material handling during processing.

(Powered platform trucks described are manufactured by Elwell Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio . . . or reader may secure additional information by simply checking CP 6366 on convenient Reader Service slip between pages two and three.)

Tank car booklet loaded with useful data

Tank car classifications for ladings, published for shippers of bulk commodities, includes in its 32 pages classifications for latest type of tank cars approved for a variety of specific commodities.

Although accuracy of list is not guaranteed and subject to revision without notice, booklet is designed to give shippers a good guide with maximum safety assurance of delivery through proper selection and use of tank cars.

"Tank Car Classification for Ladings" is issued by American Car & Foundry Co., Dept. CP, 30 Church St., New York 8, N. Y. When inquiring specify CP 6367 on handy form, pages 2 and 3.



BIG or LITTLE

BARREL or BAG

RAPISTAN CONVEYORS

cost less, earn more, because . . .

You save with "Standardized" Units. You may need a complete inter-floor system for warehousing-shipping operations, or simply smoother flow of processing - packaging - inspection. Whatever your conveyor requirements, a Rapistan system of standardized units will do the job better, for less. All Rapistan conveyors, both power and gravity, can be used together in an almost endless range of economical combinations. You get a system exactly right for your needs, without resorting to higher priced "specials".

Installation costs are lower, too. Thanks to the many different models of Rapistan conveyors, your system is pre-engineered to your particular layout. It can be installed quickly and economically without expensive

alterations. As your conveyor needs expand or change, your Rapistan equipment can be realigned to meet them. Your proximity to one of the fifty Rapistan Sales-Service agencies assures factory-trained installation and even a contractual service agreement, if desired.

You get more than good equipment. You get a conveyor system that is superbly "right" for you . . . a system carefully planned and installed to give your business the strong competitive edge of a truly effective materials handling program. We believe you'll find, as so many have found, that an engineered system by Rapistan costs less to buy and install, earns more and bigger dividends, than any other system, anywhere!

ASK FOR THESE FIELD REPORTS



Get these data-packed, illustrated reports on solutions to actual handling problems in Chemical Processing field. Each describes a specific problem as it existed, equipment installed, results obtained. No obligation, mail coupon today.

The RAPIDS-STANDARD COMPANY, Inc.
215 Rapistan Building Grand Rapids 2, Mich.
Representatives in Principal Cities

NAME.....
COMPANY.....
STREET ADDRESS.....
CITY.....ZONE.....STATE.....

Rapistan BETTER CONVEYING EQUIPMENT

CONVEYORS gravity and power belt • INDUSTRIAL CASTERS • WHEEL & TYR TRUCKS

When inquiring check CP 6368 on handy form, pgs. 2-3

building bulk storage?

Investigate **TOTE** for **SAVINGS** from **20% to 40%!**
SYSTEM

These substantial savings have actually been proved by Tote System users over a period of years. For example, here are the comparative cost figures for one large bulk material handler:

Cost of Five Silos for Conventional Storage (complete with conveying equipment) . . . **\$350,000**

Cost of TOTE SYSTEM Equipment to Provide Same Capacity:

295 #A-110	
TOTE Bins . . .	\$125,000
Auxiliary	
Equipment	15,000
Hoists, etc.	10,000
Warehouse	45,000

Total . . . \$195,000

a SAVING of \$155,000



and that's only the **BEGINNING!**

TOTE...

FILL IT
TRANSPORT IT
DISCHARGE-WEIGH
BLEND IT
STORE IT

See our exhibit in Booth 654 at the National Plastics Exposition June 7-10, Public Auditorium, Cleveland, Ohio.

Tote and Tote System Reg. U.S. Pat. Off.

TOTE SYSTEM — built around easily handled aluminum bins plus automatic filling and discharging equipment — saves all along the line because it:

- Speeds up weighing and blending operations, automatically and accurately
- Reduces labor and handling costs
- Eliminates product loss, contamination or deterioration
- Preserves original product quality
- Can be adapted readily to present or future plant layout

Tote System is equally effective for inter-plant or in-plant handling of all types of bulk materials, including liquids. Products now handled by Tote System installations include among others, flour, sugar, salt, soap, detergents, cement, whitening, carbon black, powdered coffee, powdered plastics, fluorescent powders, ethocel, and polystyrenes.

Tote System engineers will survey YOUR plant to determine the savings YOU can effect — at no cost or obligation. Meanwhile, write for new illustrated literature packed with facts and pictures.

TOTE SYSTEM, INC.

680 So. 7th BEATRICE, NEBRASKA

When inquiring check CP 6369 on handy form, pgs. 2-3

MATERIAL HANDLING

Wheel-spin in mud or snow is stopped to free lift truck . . .

toggle switch controls brake device, concentrates power

Uses: To free lift truck from mud, snow or ice.

Features: Brake-lock system, operated hydraulically, brakes spinning rear wheel and uses normal functioning of differential to free vehicle.

Description: Called the Mico-No-Stuk, device is activated by toggle switch that locks either brake independently of the other. Driver holds toggle switch in direction of spinning wheel and steps on the brake pedal. This locks spinning wheel and transmits differential power to "good" wheel. As truck moves out of slippery area, operator releases the toggle switch and normal traction is resumed.

Spinning wheel need not be completely locked. Brake may be pushed only hard enough to get sufficient power to other wheel to move truck out of area. Braked wheel can still contribute some traction, thus minimizing wheel-drag.

(Development of Materials Handling Div., Yale and Towne Company, Dept. CP, 11000 Roosevelt Blvd., Philadelphia 44, Pa. . . or for more information check CP 6370 on handy form located between pages 2 and 3.)

Tells how gearmotor unit causes turn-flip cycles

How Motocylinders can be employed to flip, turn, release, raise, or lower material in repetitive cycles is described in manufacturer's booklet.

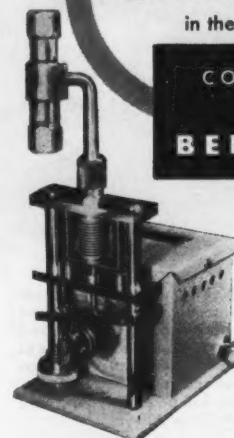
Ratings and characteristics of the complete line of standardized motor cylinders (integral type) are given. Operational and maintenance features of unit are also described.

Booklet B-6090 is issued by Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. When inquiring specify CP 6371 on handy form, pages 2 and 3.

HOW Contamination Is Prevented

in the

CORSON-CERVENY MICRO-BELLOWS PUMP



For full information about construction, capacity, performance, write for copy of Pump Booklet.

All parts of the Corson-Cerveny Micro-Bellows Pump in contact with the liquid being pumped are made of stainless steel and machined so that they fit together without packing, gasket material or any pipe compounds. The use of accurately machined cone-to-taper fittings makes this feature possible.

For this reason, the pump will not contaminate material that it is handling, and is adaptable for many specialized laboratory uses.

RESEARCH APPLIANCE COMPANY

Box 463, West View Road, Pittsburgh 9, Pa.

When inquiring check CP 6372 on handy form, pgs. 2-3



All-Electric Floatless

LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 6373 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Highway trailers go 'piggy-back' — lift truck puts them on flatcar . . .

positioning of 35' semi's is done in a few minutes with attachment

An attachment that enables a standard heavy duty fork lift truck to position a highway trailer on a railroad flatcar in a matter of minutes has been announced by an industrial truck manufacturer.

Designed for use with the standard 26,000 lb capacity Ross fork lift truck, a product of the company, the attachment allows speedy side loading and unloading of highway trailers up to 35' in length onto a specially designed railway car which will transport two trailers. The modification consists of a special short upright and a standard side-shifter with toed-in forks that support a pin which fits into a recess at the front end of the trailer.

After the lift truck has engaged the recess or "toe-plate" of the trailer, it maneuvers the trailer aboard the rail car and locks the trailer in place by dropping the kingpin in a slot in the stanchion of the railway car.

(Development of Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . . or for more information check CP 6374 on handy form between pages two and three.)

Loading, unloading of trucks speeded by mobility of roller-frames . . .

placed under palletized units, device readies cargo for lift trucks

Uses: For loading and unloading highway and local trucks carrying palletized loads.

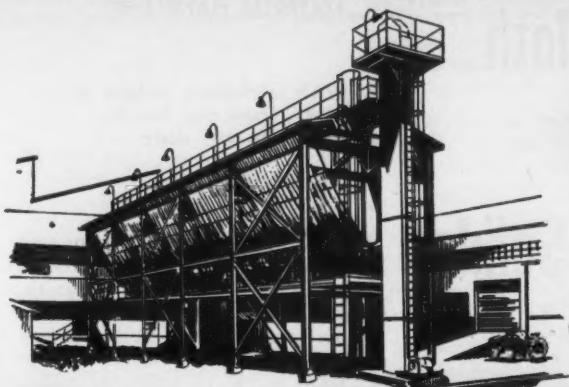
Features: Facilitates moving of palletized loads, getting them positioned for lift trucks on loading docks.

Description: When truck is backed into a dock to unload, driver loads empty pallets setting on roller frames. When they are loaded, he pushes them to end of truck, semi, or trailer for transporting by lift truck.

Frames are of high tensile strength steel with large bearing area, are in five standard styles ranging from 30 x 30" to 48 x 48". Six-roller frame (weighing 43 lb) has 1800 lb capacity. Other models have eight rollers, 2400 lb capacity, and weigh 46, 52, 60 and 68 lb.

Rolls are heavy gage and are crowned on ends for easy rolling and floor protection. Bearings are precision made; axles are hexagonal and won't turn in frame.

(Ace "Trucker" pallet rollers are made by the Frank L. Robinson Co., Dept. CP, Latham Square Building, Oakland 12, Calif. . . . or for more information check CP 6375 on handy form, pages 2 and 3.)



Line drawing: Jeffrey Standard Bucket Elevator feeding storage bin.

Photo: Jeffrey Twin-Spiral Conveyor System handling finished cement from mill to railroad cars for bulk shipment.

**OTHER JEFFREY
STANDARD UNITS**
BELT CONVEYORS
APRON CONVEYORS
SCRAPER CONVEYORS
POWER SCOOPS



THE JEFFREY

**IF IT'S MINED, PROCESSED OR MOVED
... IT'S A JOB FOR JEFFREY!**

ESTABLISHED 1877
MANUFACTURING CO.

Columbus 16, Ohio

sales offices and distributors
in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

When inquiring check CP 6376 on handy form, pgs. 2-3

VERSATILE ...

**is the word for
JEFFREY standard units**



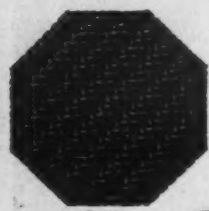
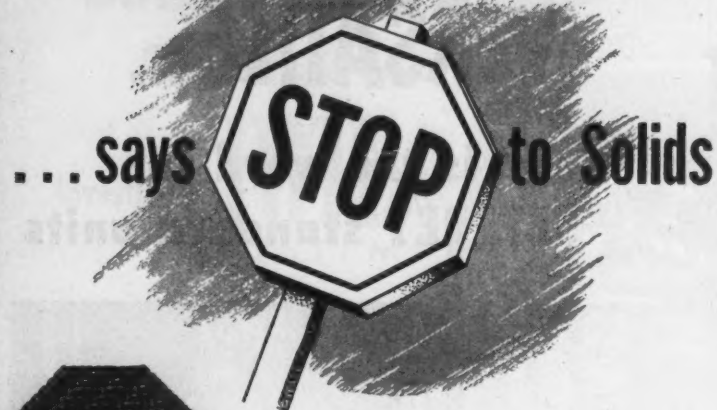
Jeffrey Standard Spiral Conveyors and Bucket Elevators are available in a range of types and sizes that meet practically every industrial requirement and operating condition.

Each Spiral Conveyor is completely assembled in our plant to assure perfect fit and alignment. Before dismantling for shipment, parts are match-marked to facilitate field erection.

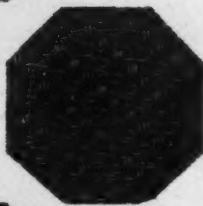
Split-head Sections are available on Jeffrey Standard Bucket Elevators. New High-Front Buckets on continuous types increase the versatility of the line.

WRITE FOR CATALOGS CONTAINING COMPLETE INFORMATION.

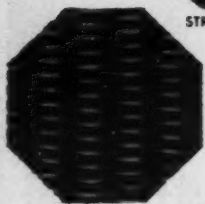
Newark Metallic Filter Cloth...



TWILL



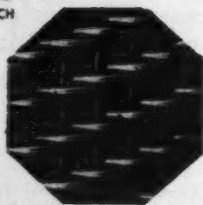
STRANDED TWILL



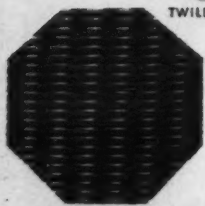
PLAIN DUTCH



Enlarged
approximately 3X



TWILL DUTCH SINGLE



TWILL DUTCH DOUBLE

Newark Metallic Filter Cloth does stop solids — the wedge-shaped openings allow only the filtrate to pass through. And, Newark Cloth is reversible, both sides being identical. Newark Metallic Filter Cloth is woven firmly and uniformly without loose wires, guaranteeing good filtration all over.

Newark Metallic Filter Cloth is available in a variety of weaves in all malleable metals, and is adaptable to practically all types of filters. When writing, please give us details on your process.

Send for our NEW Catalog E.

Newark
Wire Cloth
COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

When inquiring check CP 6377 on handy form, pgs. 2-3

MATERIAL HANDLING

With elevated height of 127", truck can handle pallets in 60" aisle...

maneuverability through off-set drive, free caster

Aisle width requirements for tote box storage have been reduced to as little as 5' through use of recently developed fork lift truck designed to handle skids and single faced pallets. Truck has elevated height of 127", can right-angle stack tote box loads in 60" wide aisles.

Single offset drive and steering wheel, compensated by free swiveling caster on other side of truck, gives unit its maneuverability, manufacturer reports.

Other models offered by manufacturer are built to transport and stack double faced pallets, pallet boxes and other types of unit loads. Of stand-up rider construction, trucks are battery powered, are capable of handling one to two ton loads in tight areas.

(Development of The Raymond Corp., Dept. CP, 57118 Madison St., Greene, N. Y. . . . or for more information check CP 6378 on handy form, pages 2 and 3.)

V-type belt conveyor has 5 or 8" widths, mitre gears...

unit can be set on floor or mounted from ceiling

Availability of a V-Type Belt Slide Bed Conveyor designed for various operations where such a conveyor would be more advantageous than a level or flat conveyor has been announced.

Constructed of formed steel beds (14 gage) in 2 widths (5 or 8"), units can be equipped with from 1-6" belts driven by a fixed-speed motor and mitre gears. Conveying unit can be mounted on floor or suspended from ceiling and mounted above an existing conveyor. Unit is available in 5 or 10' bed lengths, 5' increments.

(Development of Island Equipment Corp., Dept. CP, 27-01 Bridge Plaza North, Long Island City 1, N. Y. . . . or for more information check CP 6379 on handy form, pages 2 and 3.)

Wallace & Tiernan MASSOMETER

**FOR METERING
FREE FLOWING
SOLID MATERIALS**



Pneumatic
Recording
•
Maximum
Capacity
225 lb. per min.
•
Accuracy $\pm 1\%$
•
Overall Height—24½ in.

M-28

Write today for Description

WALLACE & TIERNAN
COMPANY INC.
25 MAIN STREET, BELLEVILLE 9, N. J.

When inquiring check CP 6380 on handy form, pgs. 2-3

WHATEVER YOUR WORKING VACUUM MAY BE...

Get It Faster and Pay Less to Hold It!

Beach-Russ Rotary Vacuum Pumps give you speedier "pump-down." They cost less to operate and maintain, due to their superior mechanical efficiency and longer service life with minimum maintenance. Whether you need vacuum in the range between 5 mm. and 10 microns, or back-up pumps for ultra-high vacuum... Beach-Russ Pumps belong in the picture!



WRITE FOR
CATALOGS on Type
SS (vacuum up to
5 mm. for dry or
semi-wet work) and
Type RP (vacuum
up to 10 microns or
better for dry or
semi-wet work.)

BEACH-RUSS COMPANY
46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 6381 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Five lb sheet of paperboard supports 2500 lb loads of bagged material . . .

will support any unitized load that fork truck can handle

Uses: As lightweight base for transporting bagged material, either with or without a pallet.

Features: Manufacturer claims low original cost makes it possible to throw away base after one using.

Description: Sheet of paperboard is 0.1" thick, and made of hard, lightweight chestnut fiberboard. Formed flap along one edge permits tapered forks of truck to slide under load, even without pallet. Instead of manhandling one bag at a time, paperboard allows as many as 70 bags to be moved together. Weight of single paperboard is 5 lb and from 40 to 60 can be stored in the same space occupied by a wooden pallet.

(Poke-Pak is a product of the Mead Corp., Dept. CP, 118 W. First St., Dayton 2, Ohio . . . or for more information check CP 6382 on handy form, pages 2 and 3.)

Trailer can be steered from either end . . .

steel rods cross-connect front and rear wheels

Uses: Trailer built to handle heavy materials. Can be used in "trackless train" systems.

Features: Two fifth-wheel assemblies, cross-connected from front to rear with steel rods, permit steering from either end. Loop-handle draw bar can be put at either end.

Description: Four-wheel-steer trailer has capacity of 8000 lb, is 4' wide, 10' long, and has a 24" deck height. Pin and clevis couplers are at each end of frame. Stake pockets are included. Wheels are mounted on roller bearings, and have 18 x 5" solid rubber tires.

(Trailer is a product of Mercury Manufacturing Company, Dept. CP, 4044 S. Halsted St., Chicago 9, Ill. . . . or for more information check CP 6383 on handy form, pages 2 and 3.)

Specific equipment for right job is theme of handling catalog

Importance of choosing right type of materials handling equipment in reducing manufacturing costs is stressed in 24-page illustrated catalog featuring vulcanized fiber products. Equipment includes trucks, trays, barrels, boxes, bins, cans. Firm also makes reinforced plastic boxes, trays.

Cat 49B is issued by Fibre Specialty Mfg. Co., Dept. CP, Kennett Square, Pa. When inquiring specify CP 6384 on handy form, pages 2 and 3.

Material: Activator solution—water with 5% ferro-sulphate.

Problem: Short service life of turbine pumps; sometimes only two weeks.

Solution: First Moyno ran 6 months without a breakdown. Using relief valves, pressure is kept at constant 120 p.s.i. Now using 7 Moynos because of this exceptional service.

Material: Anti-scale boiler treatment. (Alcohols, oils, anti-foam agents, sludge conditioners.)

Problem: Frequent pump breakdowns caused by back pressure of spray nozzles; and abrasion.

Solution: Moyno pumps cut pumping time from 20 minutes to 3, reduced down-time, increased production 200%!

Material: Caustic solution—for use in mercerizing machines.

Problem: Rotary pumps wore quickly; lost capacity; and did not have enough suction.

Solution: Moyno pumps cut maintenance and repairs to minimum—had ample suction for drawing caustic through the cloth.

Material: 40° copperas crystals in 20% sulphuric acid.

Problem: Low production of diaphragm pump.

Solution: Moyno pump handles an increased percentage of solids, which in turn increases production.

Material: Calcium carbonate slurry.

Problem: Continuous failures of centrifugal pumps.

Solution: Moyno pump still giving perfect service after 1½ years. Service is practically continuous—with pump in operation 24 hours per day.

Material: Size—containing china clay and latex.

Problem: Centrifugals unable to handle viscosity—causing frequent trouble.

Solution: Moyno pump has been on duty for a year. Pump trouble completely eliminated; no repairs required.

Six Chemicals-Handling Problems... Solved by the MOYNO® PUMP!

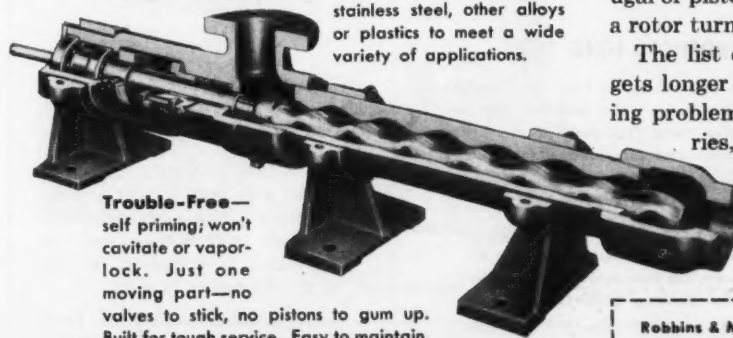
Features of the MOYNO that may solve YOUR pumping problem

Positive Displacement—Moynos are available to pull up to 29" vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at pressures to 600 p.s.i.

Gentle—No churning; won't break up semi-solids; won't aerate liquids.

Reversible—The Moyno pumps with equal efficiency in either direction.

Versatile—handles liquids, abrasive slurries, pastes—even potato salad! Rotor and stator are available in stainless steel, other alloys or plastics to meet a wide variety of applications.



Trouble-Free—self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

Looking for a pump with a fast-growing reputation for solving tough pumping problems? Then take a look at the simple, versatile Moyno!

Briefly described above are a few of the many successful case histories proving how Moynos handle jobs where other pumps fail. Why is the Moyno a "problem-solving" pump? For one thing, because it differs completely from conventional pumps . . . rotary, centrifugal or piston. Just one rugged moving part—a rotor turning within a stator—does the job.

The list of chemicals handled by Moynos gets longer every day. If you have a pumping problem, such as handling abrasive slurries, mild acids, caustics—watery, viscous or even semi-solid—find out if the Moyno can help you! Use the coupon below for prompt, complete information.

ROBBINS & MYERS • INC.

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO



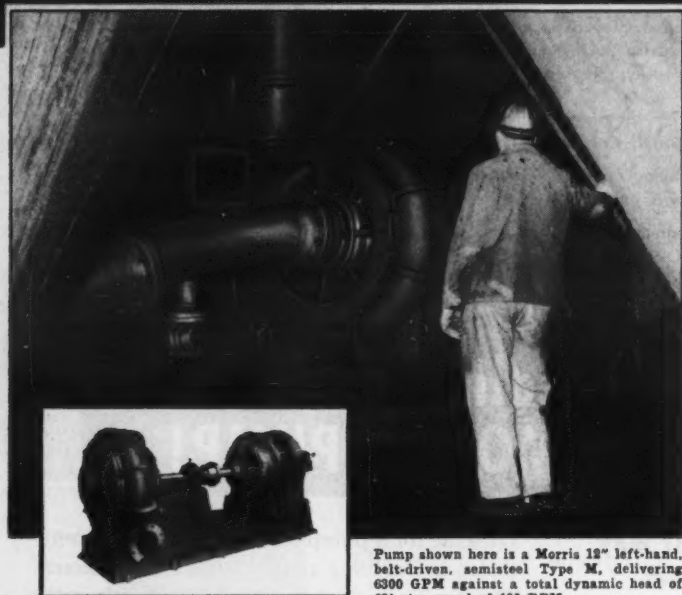
Robbins & Myers, Inc.
Pump Division, Springfield 99, Ohio

Gentlemen: Please mail free copy of Bulletin 30-B containing details on construction and operation of Moyno Pumps:

Name _____ Title _____
Company _____
Address _____
City _____ State _____

When inquiring check CP 6385 on handy form, pgs. 2-3

... for overall economy in delivering circulating water



Pump shown here is a Morris 12" left-hand, belt-driven, semisteel Type M, delivering 6300 GPM against a total dynamic head of 62' at a speed of 405 RPM.

MORRIS Type M Pump

The small high-speed pumps commonly used for circulating water are highly efficient—if the water is relatively free of fine abrasive materials.

When abrasive-laden water is carried, the high speed of these pumps accelerates the grinding action of gritty particles. Sealing rings are quickly cut and scored . . . the thinner casting sections break down rapidly—normal life expectancy is halved, frequently quartered.

MORRIS DESIGN ASSURES ECONOMICAL LONG LIFE

Where total heads do not exceed 120 feet, the larger, low-speed Morris type M Pump is more efficient for handling circulating water containing abrasive solids. Even the occasional big "tramp" piece—always a threat to the small pump installation—goes through the Morris without trouble. Depending on the pump size and total head, speeds range from a low of 188 RPM to a high of 1119 RPM.

Wearing parts are double the thickness of conventional clear water pumps. With economical upkeep a primary consideration in the design, sections subjected to most wear have

been subdivided so that the greatest erosion bears upon smaller, less expensive parts. Optional use of special corrosion-and-abrasive-resistant alloys further increases the inherent long life on the Morris Type M.

Morris Engineers have been building pumps for all types of service for 88 years. Let them consult with you on your pumping problems. No cost. No obligation. Or, send for free Bulletin 175.

MORRIS MACHINE WORKS

Baldwinsville, N. Y.

Representative in Principal Cities

MORRIS Centrifugal Pumps

When inquiring check CP 6386 on handy form, pgs. 2-3

MATERIAL HANDLING

Narrow aisles no problem for truck

Uses: Transporting of semi-rigid skids in congested areas and narrow hand truck aisles.

Features: Truck is capable of handling loads up to 4000 lb and can turn 40 x 48" intersecting aisle with a skid 24" wide x 60" long.

Description: Rider type truck weighs less than 1700 lb, complete with 400 amp battery. Speed is approximately 5 mph.



Works in tight places

Toggle lever mounted on front of tractor unit engages "dead" end of skid and raises the legs off floor for easy movement.

(Truck is produced by The Raymond Corp., Dept. CP, 63111 Madison St., Greene, N. Y. . . . or for more information check CP 6387 on pages 2 and 3.)

List wide range of trucks — 32 different types

Thirty-two different types of trucks with specifications and descriptions, plus pertinent product data and how-to-use-it information is contained in 3 1/4 x 6" illustrated booklet.

Line includes variety of hand trucks, barrel trucks, multi-purpose trucks for jack and skid systems, pry trucks, low height dollies, platform trucks, wagon trucks, and caster-wheel steer trailers.

Booklet 53-S describing floor trucks is issued by Nutting Truck and Caster Co., Dept. CP, 1467 W. Division St., Faribault, Minn. When inquiring specify CP 6388 on handy form, pages 2 and 3.

LET US SHOW YOU HOW TO

CUT WAREHOUSING COSTS . . . as much as

Paltier 75%
STORAGE SYSTEM



ASK US:

- PALTIER studies your storage problem—engineers and designs a system for your specific needs.
- Many PALTIER installations pay for themselves "right from the start."
- This booklet tells the PALTIER story, ask for it today.

PALTIER records are filled with proof after proof of storage cost cuts in the handling of every conceivable type of product. We can cut your storage costs, too!

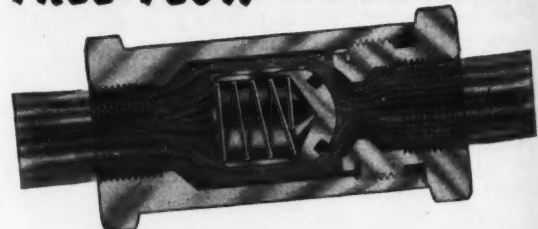


THE PALTIER CORPORATION
1713 KENTUCKY ST.
MICHIGAN CITY, IND.

When inquiring check CP 6389 on handy form, pgs. 2-3

REPUBLIC VALVES
INDUSTRIAL • CHEMICAL • AIRCRAFT

FREE-FLOW CHECK VALVE



- Very low pressure drop
- Leakproof "O" ring seal
- 1/4 psi Opening pressure
- 0 to 3000 psi service
- Small in size

- Aluminum alloy, brass—Other materials to order
- Sizes 1/2" to 1"
- Any combination of tube and pipe ports.

Write for complete catalog and nearest distributor.



RM
REPUBLIC MANUFACTURING CO.
1930 WEST 77TH STREET • CLEVELAND 2, OHIO

When inquiring check CP 6390 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

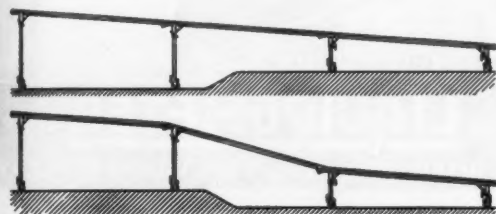
Even when on irregular surfaces, gravity conveyor carries goods smoothly . . .

with slight hand pressure, 10' sections can be made to telescope to 40' length

Uses: For loading or unloading material from one or more levels.

Features: Flexibility of telescopic joint permits conveyor to be placed on uneven or stepped surfaces as easily as on level floors without binding or jostling conveyed materials or packages between sections. Conveyor fits easily into vehicles which do not meet precise level of shipping dock.

Description: Redesigned telescopic gravity conveyor sections are joined to each other at one universal-type roller-bearing point. A self-adjusting transfer bar between sections eases ride of small packages along conveyor, which can be extended with light hand pressure to any length from 10 to 40 feet.



Joints adapt conveyor to various heights

A single, simple height adjustment of supports to maximum expected differences in levels will suffice for loading and unloading, including extension or collapse as stacking point advances.

Once adjusted for the best gravity pitch, conveyor needs no readjustments to follow stacking and unstacking pattern in storerooms, platforms, or within cars or trucks. Conveyor sections need no lifting or other attention in order to be collapsed after extension.

(Development of The Wilkie Company, Dept. CP, 5520 Arch Street, Philadelphia 39, Pa. . . or for more information check CP 6391 on handy form, pages 2 and 3.)

Specs, features of electric hoists illustrated in bulletin

Compact, planetary gear, wire rope type hoist is discussed in 14-page bulletin. Designed for intermittent duty, units are available in capacities of 250, 500, 1000, and 2000 lb. Designated the Liftabout Jr., hoist can be furnished either parallel or cross mounted, with bolt, hook, or trolley suspension. Literature includes complete specifications of units plus illustrations.

Bul 182 is available from Shepard Niles Crane & Hoist Corp., Dept. CP, Montour Falls, N. Y. When inquiring specify CP 6392, pages 2 & 3.

YALE *first to offer* "3-Way-Finance-Plan"

The most flexible finance-lease plan available to industry

Look what you get! A payment plan "tailored" to meet your needs . . . plus prompt delivery of the Trucks you choose.

Time payment plan

Now, you can have the YALE TRUCK you need on lowest monthly charges . . . after a small down payment. You get immediate, cost-cutting use from America's best-known Industrial Trucks . . . have years to pay.

Leasing plan

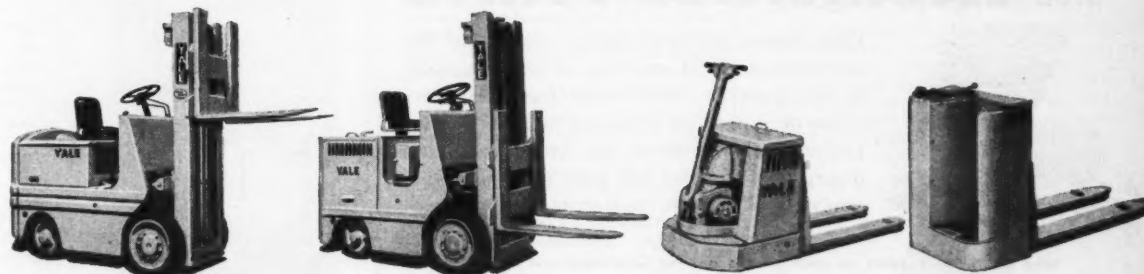
The length of leasing period depends entirely on your requirements. But, whatever you choose, no capital outlay is required . . . and the monthly rentals are often tax deductible as current operating expenditures.

Lease with purchase-option

Get the advantages and savings of the straight lease plan: no initial cash outlay . . . small monthly rentals . . . immediate use. But, you can arrange for full title by paying an additional sum at end of contract period.

See how quickly a Yale Truck pays for itself in your plant or warehouse

And, every YALE TRUCK . . . Gas, Electric, Diesel, LP-Gas . . . is the finest of its type . . . the modern mechanized equipment that, for many firms, has cut handling costs in half . . . then in half again.



Gas, Electric, Diesel and LP-Gas Trucks • Worksavers and Warehousemen

YALE*
INDUSTRIAL TRUCKS
AND HOISTS

*Reg. U. S. Pat. Off.

MAIL THIS COUPON TODAY

The **YALE & TOWNE** Manufacturing Company, Dept. 122
Roosevelt Boulevard, Philadelphia 15, Pa.

Please have your local representative call with complete information on the YALE "3-Way-Finance-Plan"

Company _____

Name _____ Title _____

Street _____ City _____ State _____

In Canada write: The Yale & Towne Manufacturing Company
St. Catharines, Ontario, Canada

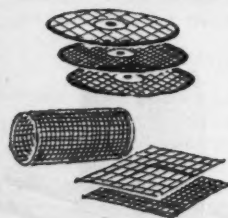
When inquiring check CP 6393 on handy form, pages 2-3

your **WIRE CLOTH** needs
may be in stock at
CAMBRIDGE



Supplies of many of the most frequently used types of industrial wire cloth are kept in our warehouse ready for immediate shipment to you. And even if the type you use is not in stock, we can schedule our looms to have your material in your plant without delay. Any metal or alloy; sizes range from 20 x 250 mesh up to 4" openings...and accurate mesh count is our pride.

also **FABRICATED PARTS**



Filter leaves, strainers, sizing screens, etc. We can fabricate most any type of part you need, in any quantity. We'll work from your own prints or, if none are available, our Engineering Department will draw up prints from your description of what the part must do. Once you've O.K.'d them, we'll start production.

Why not have us quote on your next order for wire cloth in bulk or fabricated parts? Write direct or call in your Cambridge field engineer. He's listed under "Wire Cloth" in your classified telephone directory.

FREE CATALOG gives full range of wire cloth available, also shows fabrication facilities and includes valuable metallurgical data. Write for your copy today.



The Cambridge Wire Cloth Co.

WIRE
CLOTH

METAL
CONVEYOR
BELTS

SPECIAL
METAL
FABRICATIONS

Department F
Cambridge 2,
Maryland

OFFICES IN LEADING INDUSTRIAL AREAS

When inquiring check CP 6394 on handy form, pgs. 2-3

MATERIAL HANDLING

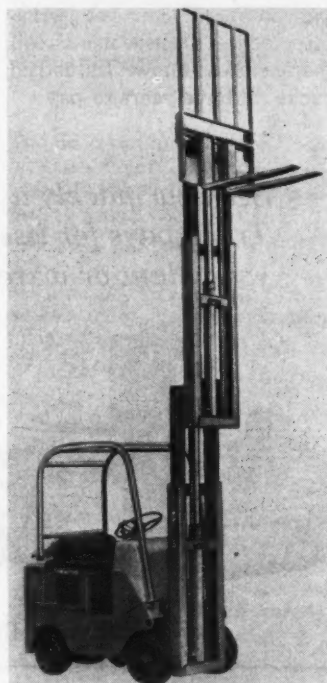
Extra-high stacking to 216"
by lift trucks possible
with special mast...

telescoping addition can be
operated independently

Uses: For use on manufacturer's lift trucks to increase reach of stacking heights.

Features: Extremely high stacking (to 216") is possible with lift truck equipped with extra mast. Telescopic feature makes it possible for one truck to work in low ceilinged areas such as in boxcars and highway trailers, and also for high stacking in storage areas.

Description: In six different sizes, Double Telescopic Mast consists of two short masts, which may be operated independently or simultaneously. In low-ceilinged



Uses two separate cylinders

areas, forks are raised or lowered with both masts down. For high stacking, second mast is raised by first to give added lifting height.

(Development of Towmotor Corp., Dept. CP, 1226 E. 152nd St., Cleveland 10, Ohio... or for more information check CP 6395 on handy form, pages 2 and 3.)

**"LIQUIDS WORTH STORING
ARE WORTH MEASURING"**

with a

LIQUIDOMETER

Tank Gauge

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

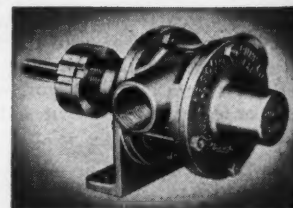


WRITE FOR COMPLETE DETAILS
THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 6396 on handy form, pgs. 2-3

JABSCO STAINLESS STEEL PUMPS SOLVE CORROSIVE PUMPING PROBLEMS

**Designed and Engineered
for Chemical Applications**



Jabasco's complete line of self-priming, corrosion-resistant pumps answer a multitude of pumping needs. Models 2810 (1" pipe size), 2870 (1/2"), and 2690 (3/4") have all metallic parts of Type 316 stainless steel. Shafts are supported by oversize, replaceable carbon bearings, stuffingbox type shaft seal with chemical resistant packing. Pumps function perfectly even with dry suction lifts approaching 15', no foot valve is required. When primed, they suck as high as 26'. Jabasco pumps have no metal-to-metal contact, no gears to wear or become noisy. The exclusive "camflexed" Neoprene Impeller is the only moving part. This tough, long-lived, wear resistant impeller is self-lubricated by the liquid pumped. Jabascos are economical, low in first cost, and trouble and maintenance free, even under continuous operation. May be mounted at any angle to pump thin or viscous liquids, and can be operated efficiently at low or high speeds. At 10' head and 1750 RPM, Model 2810 delivers up to 27 GPM, Model 2870 up to 10 GPM, Model 2690 up to 4 GPM. Other stainless steel models also available with ball bearings and mechanical seals. For complete information on how Jabasco can solve your pumping problems, write **Jabasco Pump Company**, 2031 North Lincoln Street, Burbank, California.

When inquiring check CP 6397 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

Flexible material handling provided with use of light trailers . . .

especially designed for maneuverability, easy starting and rolling

Uses: For plant and warehouse power-equipped trains which do not require extra heavy construction for high capacity rating trailers.

Features: Bolted-on running gear parts do not require torch cutting and welding for maintenance and repair.

Description: Trailer has lighter construction, but follows the same design, recommended plat-



Has high maneuverability

form heights and wheel sizes as on industrial trailers. Platform height is 14", capacity 3000 lb. Large diameter roller-bearing wheels have demountable rubber tires.

(Trailer is product of Nutting Truck and Caster Co., Dept. CP, Faribault, Minn. . . or for more information check CP 6398 on handy form, pages 2 and 3.)

Simplicity, utility of belt conveyors outlined in extensive catalog

Entire range of manufacturer's standardized belt conveyors is described in extensive 192-page catalog emphasizing utility and simplicity of the heavy-duty units.

Heavily illustrated, catalog includes 60 pages of typical conveyor layouts and installation photographs. Each standardized component and accessory is illustrated and described with line drawings showing relationship of unit to entire conveyor. In addition, range of application of each unit is tabulated for quick reference.

Among accessories listed are feeders, hoppers, conveyor supports, backstops and brakes, walkways, housing belt cleaners, spouts, hoods, gates, trippers and magnetic pulleys.

Cat 76-A is issued upon letterhead request to Barber-Greene Company, Dept. CP, 400 N. Highland Ave., Aurora, Ill.

STOP TRAMP IRON

with ERIEZ Magnetic Pulleys

Most Every Industry Uses ERIEZ Pulleys to REMOVE TRAMP IRON . . . Prevent Machinery Damage . . . STOP FIRES and Solve Product Purification Problems

THE redesigned patented line of ERIEZ *improved*—Permanent Pulleys makes available the most efficient, powerful and economical automatic installation for separating magnetic from non-magnetic materials conveyed on a belt.

With an ERIEZ Permanent Pulley you have no operating cost, no maintenance, no electric power required. ERIEZ Pulleys will perform, at top efficiency, under operating conditions of high or low temperatures and on wet or dry materials!

ERIEZ' complete line has a pulley for your exact need.

Extremely rugged construction, lined with powerful Alnico V, assures you the utmost in structural as well as magnetic strength.

Permanent Non-Electric ERIEZ Pulleys can never fail . . . electrical system failure will no longer endanger or stop your operation.

Top working efficiency is assured through belts of rubber, canvas, stainless steel or any other non-magnetic material.

Low installation cost . . . merely drop the shaft into the bearings and put on the caps.

Here's low cost, uninterrupted protection from tramp iron for costly crushers, grinders, pulverizers, stokers, etc.

Here's What Users Say . . .

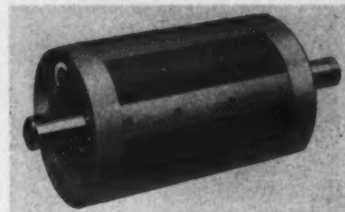
ERIEZ installation at Ferti-Soil Company, Rahway, N. J., is removing 25 pounds of tramp iron from each ton of raw material processed!

"Operation without the ERIEZ Pulley would now be unthinkable," says James Smith of the Ferti-Soil Company. "Preventing machinery damage saves us about \$1,000 annually, elimination of shutdowns saves another \$3,000 a year, and man hours saved averages \$1,200."

"We used mechanical separating devices in the past, but this ERIEZ Magnetic Pulley has proved to be by far the most positive and satisfactory means of eliminating tramp iron from our product."



The high degree of attraction of the magnetic pulley is shown in this operation where tramp metal is held firm until carried out of the magnetic field by the conveyor belt. The fertilizer being processed then drops into a mill for grinding and the ferrous contamination passes onto the chute back of the pulley. This installation assures protection to processing machinery and delivery of a clean finished product.



New Patented Improved Designs Afford . . . Greater Protection Than Ever Before!

From ERIEZ, the pioneer and original producers of the permanent non-electric magnetic pulley, come redesigns and improvements which make the most efficient, versatile line of permanent magnetic pulleys available. Years of engineering, manufacturing experience and testing have gone into the new *improved* ERIEZ Magnetic Pulleys. 80 *improved* standard sizes with capacities from 50 to 18,600 cu. ft. per hour are available for prompt delivery . . . added to this any number of special widths and shafts are available to meet your exact requirements. For peak efficiency, dependability and power, install an *improved* ERIEZ patented Permanent Pulley.

New Permanent Magnetic Super Sweeper Keeps Lots, Roadways, Factory Aisles, etc. Free of Dangerous Tramp Iron



Here's a streamlined, powerful magnetic sweeper designed to pick up and hold dangerous tramp iron from large areas, helps to keep areas clean and safe, reduces accidents, tire punctures, etc.!

PUSH IT • PULL IT • SUSPEND IT!

Entirely new, fast cleaning principles make SUPER SWEEPER a natural for cleaning even the largest areas in a short time. It can be used by most everyone! Removes nails, etc. from parking lots, garages, warehouses and terminals . . . cleans factory floors of metal shavings, chips, etc. Removes tacks, staples, etc. from floors of manufacturers . . . ideal for foundries, contractors, platers, etc. Want more information—fill out and mail the handy coupon at right.

FOR INDOOR OR OUTDOOR USE . . .

Versatile in design, it can be used indoors or out . . . four sizes in three magnetic strengths for medium, heavy and extra-heavy duty tramp iron removal are available with all attachments for manual or mechanical operation. SUPER SWEEPER is quickly cleaned by turning magnetic face up with handle and stripping the metal accumulation from the sturdy neoprene cover. It has been designed for indoor or outdoor use . . . you can pull it, push it or suspend it!!!

Write for New, Free 2-Color Bulletins . . .

Fill out and clip the handy inquiry coupon below and we'll send you all available information on these products. Bulletin 501 is a six-pager packed with technical information, photos, dimensions, etc. on the entire pulley line. Bulletin 555 fully describes ERIEZ versatile new Magnetic Super Sweeper. Get your copy by return mail.

CLIP AND MAIL TODAY

ERIEZ

ERIEZ MANUFACTURING COMPANY
73 B. MAGNET DRIVE • ERIE, PA.

Name

Title

Company

Street

City State

Sales Offices throughout the United States

• Please send me

☐ PULLEY BULLETIN 501

☐ SWEEPER BULLETIN 555

When inquiring check CP 6399 on handy form, pgs. 2-3

Use **BRANFORD**



"THE HEART THAT BEATS

300,000 TIMES AN HOUR"

The Original PNEUMATIC VIBRATOR

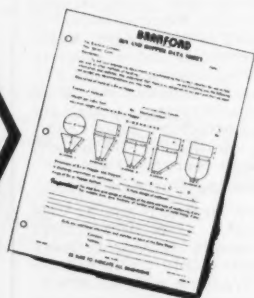
*for Moving Materials in
Hoppers, Bins, Chutes, etc.*

Branford Vibrators, installed on Hoppers, Bins, Chutes, etc. for moving powdered or granular chemicals and other inert materials, have proved their worth in dependable, economical, day-after-day service. Originated by us in 1915, Branford Vibrators give full power starting and controlled RPM operation. Low in air consumption and with simple, long wearing parts, they will help keep your production at its peak.

HOW THIS DATA SHEET CAN SAVE YOU MONEY

Branford engineers will recommend just the right equipment you need based on information you supply on Branford's easy-to-use Data Sheets.

Write for details today.



The **BRANFORD** Company

CONTINUING NEW HAVEN VIBRATOR COMPANY
147 CHESTNUT STREET, NEW HAVEN, CONN.

When inquiring check CP 6400 on handy form, pgs. 2-3

MATERIAL HANDLING

Slip-on feature converts fork truck to dumper

A rotary dumping mechanism that converts a fork truck from fork operation to dumping operation in less than 20 min has been recently introduced by manufacturer.

Device slips readily onto forks and dumping action permits forward rotation of 190° by using hydraulically-actuated pinion gear arrangement. As



Forward rotation is 190°

shown in photo, truck's permanently attached forks are hydraulically adjustable, facilitating clamping action for large or small-size materials.

(Development of Automatic Transportation Co., Dept. CP, 149 W. 87th St., Chicago 20, Ill. . . . check CP 6401 on handy form located between pages 2 and 3.)

CO hazard in plant area overcome with use of catalytic muffler on gas lift trucks . . .

concentration of harmful exhaust fumes in atmosphere reduced by 95 per cent

When Simonds Abrasive Company of Philadelphia, Pa., modernized storage facilities in their abrasive grain crushing department, it was decided that gasoline-powered fork lift trucks should be used. However, the accompanying problem of the accumulating carbon monoxide fumes in the enclosed working area also had to be considered before the final purchase of the trucks.

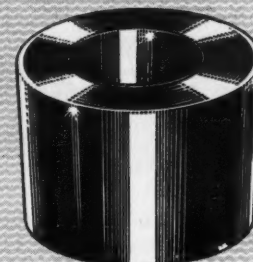
One answer to the exhaust fumes problem was found in equipping two gasoline powered lift trucks with catalytic exhausts in place of regular mufflers.

These exhaust units oxidize more than 95 per cent of the carbon monoxide and hydrocarbons in the

FOR SUBMERGED

Oilless BEARINGS

Specify



Works Where Others Won't!

- OPERATE DRY or SUBMERGED IN DYES; PLATING, CLEANING AND CHEMICAL SOLUTIONS; GASOLINE; FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE — even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS AND OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

GRAPHITE METALLIZING CORPORATION

1004 HEPPELIAN AVE. • Yonkers, New York

Please send data on Graphalloy
SUBMERGED OILLESS BEARINGS.

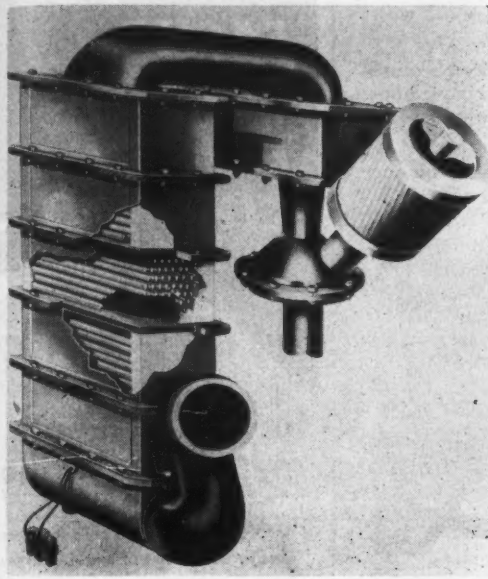
NAME & TITLE		
COMPANY		
STREET		
CITY	ZONE	STATE

When inquiring check CP 6402
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

truck exhausts, turning them into harmless CO₂ and water vapor. This in turn safeguards the health of workmen exposed to the exhaust gases.



After passing through exhaust freshener, only 5 per cent of original CO fumes discharge into atmosphere

By purifying the engine exhaust, the OCM units prevented not only the physiological symptoms of carbon monoxide poisoning, but also dangerous psychological symptoms.

Basic unit of OCM catalytic exhaust systems is a cartridge of evenly spaced porcelain rods with a catalytic agent.

Depending on the size of engine, two, three or more of these units are placed in series in a metal container. As the exhaust gases pass over the porcelain rods, the catalyst oxidizes the carbon monoxide and hydrocarbons to produce harmless carbon dioxide and water vapors. On leaving the unit, exhaust contains only a slight trace of the original contaminants.

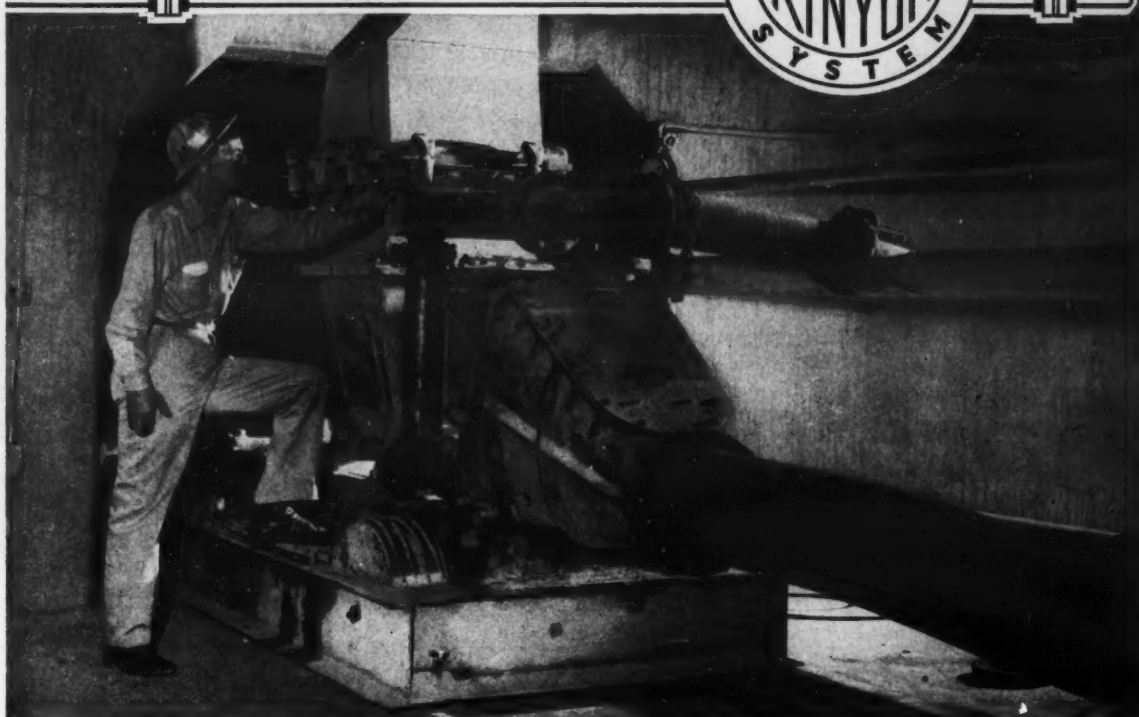
(OCM catalytic exhaust systems as used by Simonds are manufactured by Oxy-Catalyst, Inc., Dept. CP, Wayne, Pa. . . . or for more information check CP 6403, pages 2 and 3.)

Bulletin outlines highlights of drum handling device

Features of drum handling attachment for use on manufacturer's Spacemaster electric fork trucks are described and illustrated in bulletin. Called the Liftomatic, mechanical unit is designed to engage, transport, place or tier any conventional type drum without use of pallets or dunnage.

Bulletin describing attachment is issued by Dept. R-33, Lewis-Shepard, Dept. CP, Watertown, Mass. Specify CP 6404, pages 2 and 3.

CONVEYING MILLIONS OF BARRELS OF CEMENT . . . WITH MINIMUM DOWN-TIME



In a bulk-cement storage and shipping plant on the West Coast, two Fuller-Kinyon Portable Pumps (one shown above) are used for conveying bulk cement from trucks to storage silos. These same pumps also convey the cement from the storage silos to ocean-going, cement-carrying ships. Air for conveying is furnished by two Fuller Rotary Duplex Single-stage Compressors, capacity of each 2040 c.f.m., at 40-lb. pressure.

In this particular operation it is highly essential that the Fuller-Kinyon Pumps and Fuller Rotary Compressors operate at highest efficiency at all times, because the wharfage charge is \$2.00 for every minute the ships are tied up to the wharf, in addition to operating cost of the ships.

Each pump operated approximately 1100 hours during one year, and this was accomplished with a total emergency shut-down of only one hour and fifty minutes for repairs. Such operation is the result of two very important factors, viz: (1) Equipment designed and built to give satisfactory service under any and all kinds of working conditions; (2) careful overall supervision of the equipment and good housekeeping by the operating crew in the plant.

Fuller-Kinyon Conveying Systems are in operation in hundreds of chemical-processing plants throughout the world, giving day in and day out, 24-hour service, at minimum operating costs. When you have a materials-conveying problem, tell us about it . . . chances are we can show you how to improve your operation.



Write for Bulletin G-1, "4 Basic types of conveying systems built by Fuller".

Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS—
COMPRESSORS AND VACUUM PUMPS—
FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY, Catasauque, Pa.
Chicago 3 • 120 So. LaSalle St.
San Francisco 4 • 420 Chancery Bldg.

P-145

When inquiring check CP 6405 on handy form, pgs. 2-3

NOW moves **32 drums an hour**
with **ONE MAN!** *

Formerly 16 Drums
an hour with
overhead crane
and 2 men....

THE LIFT-O-MATIC
POWER TRUCK ATTACHMENT
for **DRUM HANDLING**

✓ **Simple**... One operator can attach or remove unit, **WITHOUT TOOLS**, in only 2 minutes.

✓ **Automatic**... Raising or lowering truck carriage provides automatic, mechanical pick-up and release. Additional operator controls unnecessary.

✓ **No Pallets Needed**... Move, tier or place drums quickly without pallets.

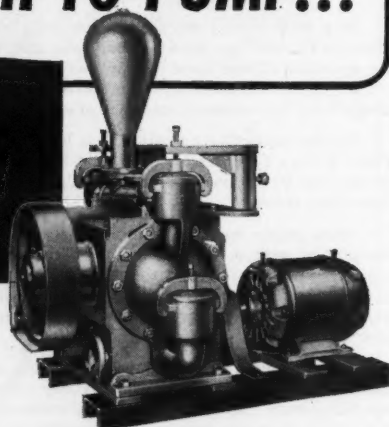
✓ **FITS ANY TRUCK** * Case history on request

Write for Details **MARVEL INDUSTRIES, Inc.**
2234 CLEVELAND ST., EVANSTON, ILLINOIS

When inquiring check CP 6406 on handy form, pgs. 2-3

IF IT'S TOUGH TO PUMP...

You need a
SHRIVER
DIAPHRAGM
PUMP



for

- ✓ Corrosive
- ✓ Abrasive
- ✓ Viscous
- ✓ Thick • Heavy
- ✓ Delicate
- ✓ Hazardous Materials

Bulletin 137 tells why.

POINTS TO REMEMBER

- No contact between fluid handled and mechanical parts of pump.
- No packings, hence no leakage.
- Easy to inspect and clean.
- Minimum maintenance cost.
- Parts contacting fluid made of any metal, rubber or synthetic resin lined.
- Ample pressure; wide capacity range.

T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.
Filter Presses • Filter Media • Diaphragm Pumps

When inquiring check CP 6407 on handy form, pgs. 2-3

MATERIAL HANDLING

**If fork truck isn't around,
hopper can be moved
by jack-tongue**

Uses: Hopper is designed for transport with either a jack-tongue or fork truck.

Features: Worker downtime is reduced because he doesn't have to wait for lift truck to move hopper. More efficient scheduling of trucks is also possible.

Description: Base of hopper has wheels on one end, and is equipped with socket to take jack-



Moved with jack-tongue or fork truck

tongue. Hoppers of this type are available with capacities from 1/2 to 2 yards.

(Made by Roura Iron Works, Inc., Dept. CP, 1401 Woodland Ave., Detroit 11, Mich. . . or for more information check CP 6407A on handy form, pages 2 and 3.)

**Lifts 40-ton load 40° for dumping
bulky, granulated materials
from trucks, semi's . . .**

electro-hydraulic design tilts cargo in 60 sec;
remote control allows one-man operation

Uses: For unloading bulky granular materials such as wood chips, potash, coke, cotton seed, soy beans, etc, from trucks and semi-trailers.

Features: Hydraulic dumper speeds unloading of trailer trucks, lifts trucks with gross weight of 80,000 lb to 40° angle in 60 seconds and lowers them in 40 seconds. One man can operate the system efficiently.

Description: Dumper has two 20 hp motors directly connected to hydraulic pumps. Either motor is capable of lifting platform (available in lengths from 40-60') and fully loaded truck. Two four-sleeve hydraulic telescoping cylinders pivot at base of "A" frames on either side of the platform.

Platform is heavily reinforced to prevent twisting or torsional bending. Wide separation of pivot

**FASTER,
EASIER,
MORE
EFFICIENT
CLEANING...**

for **2 1/2 cents**
per gallon

Whether the job calls for cleaning heavy duty tanks of metal, plastic and glass lined, or cleaning general equipment, Alconox combines power with the gentleness that spells **SAFELY CLEAN.**

Compounded from numerous different chemicals Alconox is blended into a fast acting multiple cleaning detergent that meets your cleaning needs every time—and at 2 1/2 cents per gallon.

Used by leading industrial firms who found it better for such varied uses as cleaning ball bearing assemblies, optical lenses and industrial glass piping systems, after recommendations by their own research departments.

ALCONOX outsells
because
it outperforms



Literature,
Samples and
the name of
your nearest
distributor
upon request.

For specific problems
write or call
our Technical Department

ALCONOX, INC.

WETTING AGENT DETERGENT
61-63 Cornhill Ave. Jersey City 4, N. J.

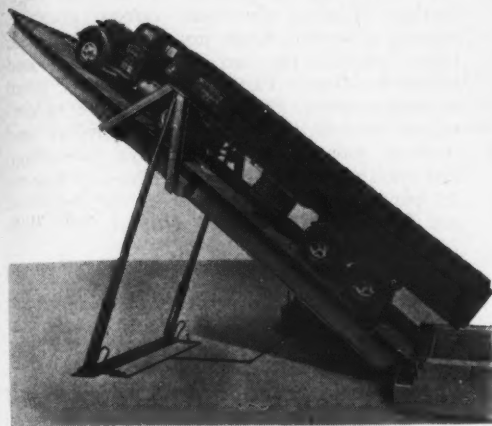
When inquiring check CP 6408
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

points and low center of gravity provide stability needed for dumping operations.

Safety is assured by extra-heavy hydraulically controlled stops that block rear wheels of truck. Dumper can be furnished for grade-level or pit



40 ton load 40° in one minute

operation, or for use with scales. Semi-trailers up to 54' long, maximum allowed on the roads in most states, can be handled by platforms measuring 50' long.

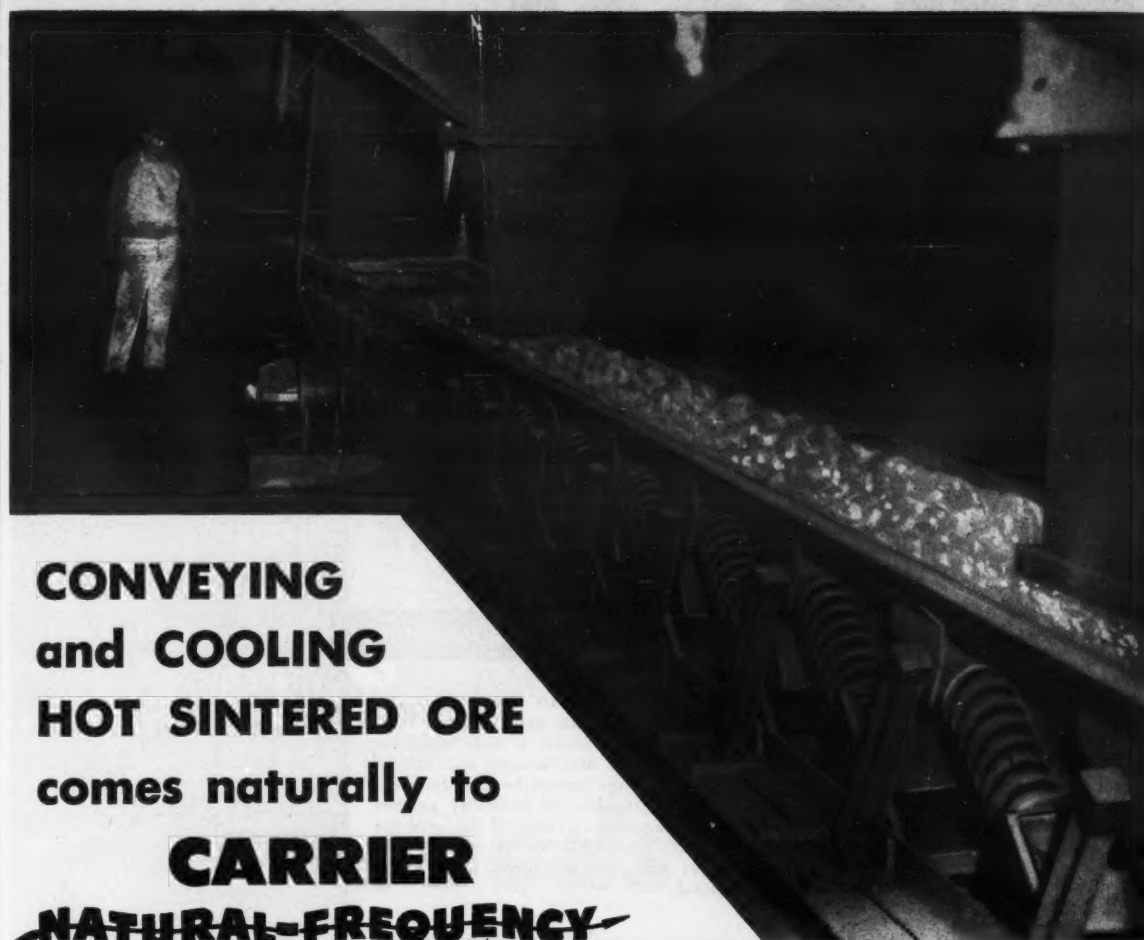
(Development of Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. . . . or for more information check CP 6409 on handy form, pages 2 and 3.)

Coated textiles make conveyors rugged in performance, light in weight

Constructed of vinyl chloride polymer and copolymer in combination with textile base, belting retains strength imparted by a solid woven cotton base and has high corrosion-resistant qualities. Solid woven base is a multi-ply belt where plies are actually interwoven and have no dependence on adhesive qualities of covering material. Coating makes belting immune to stretch, shrinkage and deterioration from prolonged exposure to conditions of service that are alternately wet and dry.

Belt works at temperatures from 22° below zero to 212°F. When special coatings are applied, belt will operate at 94° below zero. It is non-flammable, and not affected by water, dilute acids, alkalis, alcoholic solvents, or sugar. Cleaning is done by washing or steaming. Application of belting has been made in coal and coke mining, machinery assembling, and fish and fruit canning industries.

(Belting is development of Scandinavia Belting Co., Dept. CP, 248-250 Central Ave., Newark 1, N. J. . . . or for more information check CP 6410 on handy Reader Service slip located between pages two and three.)



CONVEYING and COOLING HOT SINTERED ORE comes naturally to **CARRIER** **NATURAL-FREQUENCY** **CONVEYORS**

Carrier Natural-Frequency Conveyor in Alan Wood Steel Co. plant, Conshohocken, Pa.

Conveying and cooling up to 40 tons of hot sintered ore an hour is a "natural" for Carrier Natural-Frequency Conveyors. The 57-foot unit in Alan Wood Steel Company's Conshohocken plant, above, is powered by one 7½ H.P. drive and has a one-piece steel-plate pan, ½" thick. It receives the 700° (F.) ore from hoppers, then quickly vibrates it to storage with a gentle, abrasion-free motion. The conveying speed is 90' per minute.

Notice that no water jackets are required for cooling—the conveyor's spring hangers have air-gap insulation spaces that not only cool the pan and ore, but also eliminate the possibility of corrosion and leakage!

And because of exclusive Natural-Frequency design, there's an absolute minimum of maintenance and down-time!

Hundreds of America's leading industrials are now using Natural-Frequency Conveyors and processing equipment for many hard-to-handle products—things like limestone, coke, mill scale and slag . . . cement clinker . . . castings . . . machine turnings . . . sand . . . minerals . . . plastics . . . bulk chemicals . . . food products. If you handle "tough" materials—anything hot, sharp, wet, abrasive, friable, brittle, stringy, jagged or oily—it will pay you to get the whole Natural-Frequency story. Mail the coupon, *today!*

Carrier Conveyor Corporation—Dept. CP-1-4
Frankfort Avenue at Clifton, Louisville 6, Ky.

Gentlemen: Without obligation, please send complete information on Carrier Natural-Frequency Conveyors.

Firm _____
Street _____
City _____ State _____
Att: Mr. _____ Dent. _____

When inquiring check CP 6411 on handy form, pgs. 2-3

TYGON

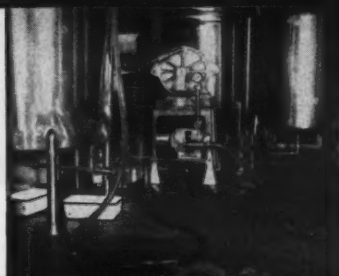
the economical answer
to
expensive corrosion problems

Tygon is the generic name for a group of plastic compounds specifically designed to combat corrosion. Based on a series of selected polyvinyl resins, TYGON offers outstanding protection against both acids and alkalis plus oils, greases, water and most solvents, except esters, ketones and certain aromatic hydrocarbons. The various forms of TYGON available make its proper application a simple matter for many uses in many industries under many conditions.

As tubing

TYGON PROVIDES SAFE TRANSMISSION FOR VIRTUALLY ANY LIQUID, GAS OR SEMI-SOLID

TYGON Tubing is widely used in both plant and laboratory. In the "lab," TYGON'S glass-like clarity, full flexibility, smooth surfaces, non-contaminating and non-oxidizing properties make it quicker, easier, safer and cheaper to use in the most intricate "set-ups" or with the most delicate solutions. In the plant, these same properties plus its light weight, high strength, excellent abrasion resistance and easy installation, give TYGON tremendous advantages over conventional piping. TYGON Tubing is available in six standard formulations, in clear or glossy black, with a wide range of physical, chemical and electrical properties. Sizes range from .12" I.D. to 2" I.D. Braided jacket reinforcement in fabric, plastic and stainless steel is also available for use with constant working pressures up to 300 psi.



As linings

TYGON OFFERS HEAVY DUTY PROTECTION TO EQUIPMENT OF PRACTICALLY ANY SIZE OR SHAPE

TYGON press-polished sheeting in thicknesses of 3/32" or 3/16" makes it ideally suited to the protection of tanks, tank cars, diffusional towers, vats, reactors, bins, hoppers, troughs, pipe and other processing equipment against a wide range of chemicals. Its unique resistance against oxidizing acids, oils, greases and certain solvents permits the use of TYGON in jobs other linings cannot handle. Its wear resistance assures long life with the most abrasive materials. Its flexibility permits close conformance to the most intricately shaped equipment. Its lack of the need for "curing" makes possible installations of virtually any size. TYGON, for lining work, is available in two standard compounds—TL 104 (Black) for general use and TL 104-A (White) where solution visibility is desired.



As gasketing

TYGON PROVIDES POSITIVE, ENDURING SEALS FOR ALL TYPES OF PROCESSING EQUIPMENT

Die-cut, molded, or extruded, TYGON is the sure answer to tough gasketing jobs in chemical processing or general industrial equipment. Its chemical resistance, abrasion resistance, resilience, high strength, non-contaminating and non-oxidizing properties make it practical to use under a wide range of operating conditions. TYGON gaskets can be die-cut from calendered or press-polished sheeting (1/64" to 1/2" thick); can be molded in practically any size or shape; can be extruded as tubing, solid cord, strip, or channel in continuous lengths. A number of standard compounds are available.



As paint

TYGON OFFERS EASILY APPLIED, LASTING PROTECTION AGAINST CORROSIVE FUMES AND SPILLAGE

As a paint, TYGON is primarily used to protect plant and equipment against corrosive fumes and spillage. It is also used against immersion in mild corrosives or to prevent contamination of delicate solution. TYGON Paint is easily applied and quick drying. Dry, its film is chemically resistant, tough, flexible, and smooth; resistant to cracking, chipping or crazing. There are two types of TYGON Paint available. TYGON "Series K" Paints do not require a primer and are used against mild corrosion. TYGON "Series TP" Paints are for use with primers under severe conditions of corrosion. TYGORUST, the "no-prep" vinyl primer is recommended for use under either type of TYGON PAINT on rusted metal—wet or dry.



Why not solve your corrosion problems with the versatile TYGON?
Write, today, for full information about this plastic of many uses.

U. S. STONWARE CO. AKRON 9, OHIO

When inquiring check CP 6412 on handy form, pgs. 2-3

Briefs . . .

Survey of engineering materials

Sixteen experts give exhaustive surveys of materials of construction pertinent to chemical engineering, including aluminum, carbon, graphite, cements, elastomers, fibers, iron, steel, lead, nickel, paints, plastics, tin, less common metals, and numerous alloys. Particular attention is given to improvements, applications, resistance to corrosion, manufacturing economies, physical and chemical properties, techniques for fabricating, and availability. 112 pages, 23 tables, 21 figures, 25 photographs, 1969 references. ("Industrial and Engineering Chemistry," October 1953, page 2171.)

Flexibility test for rubber

Rubber test pieces are bent in the shape of a U between parallel surfaces that are connected with a pantograph linkage. Simple measurements of force and centroid distances enable calculation of flexural rigidity. Four pages, 4 figures. ("Analytical Chemistry," Nov. 1953, page 1730)

Internal corrosion of tankers

Reprinted from the Transactions of the Society of Naval Architects and Marine Engineers, 60, 382 (1952), this symposium deals with the nature and control of corrosion in tankers, and includes a study of pertinent inhibitors. Economic aspects and evaluation are presented and the papers of the symposium are supplemented with an extensive discussion by the participants. Thirty-seven pages, 25 tables, 40 figures, 13 references. ("Corrosion," Nov. 1953, page 388)

Pigments for coating paper

This paper deals with the extent to which calcium carbonate, clay, and titanium dioxide meet the basic requirements of a coated paper: good uniformity, improved smoothness, satisfactory receptivity to ink, high brightness, optimum particle size (0.2 to 0.3 microns) for good opacity, and improved color. 2 pages. ("Paper Industry," Oct. 1953, page 783.)

Thermal conductivities of gases correlated

Thermal conductivities of gases at high pressures are correlated by plotting the thermal conductivity ratio (ratio of "k" at pressure "p" to "k" at one

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by the Editorial Staff of CHEMICAL PROCESSING

atmosphere) against reduced pressure for values of constant reduced temperature. Ranges are thermal conductivity ratio, 1 to 9; reduced pressure, 1 to 7; reduced temperature, 1 to 3. 4 pages, 5 tables, 5 figures. ("Chemical Engineering Progress," October 1953, page 539.)

Hydroperoxide-dextrose formula for hot rubber

A pilot plant investigation results in development of an activated hydroperoxide-dextrose formula for polymerization at 122°F that could increase the polymerization capacity of a GR-S plant by 18 to 31 per cent. The recipe is simple, results are reproducible, no preparation of activator is needed and the rate of reaction is easily controlled by varying the dextrose content. The process can be used in full-scale operation. Five pages, 12 tables, 11 references. ("India Rubber World," Nov. 1953, page 209)

Testing of detergents

Various aspects of detergency that bear upon testing, scouring of raw wool stock, kier boiling, and removal of oily soil are discussed and illustrated. Eleven pages, 11 tables, 9 figures, 11 references. ("American Dyestuff Reporter," Nov. 9, 1953, page 753)

"Skin" titanium strip to improve bending properties

Removal of 0.001 inch of surface metal greatly improves the bending properties of 0.021 to 0.083 gage titanium strip, whether the thin layer is removed by grinding or by pickling. Numerous bend angle tests are reported. Three pages, 5 figures. ("Iron Age," Dec. 1953, page 165)

Relation of technical press to industry

An editor of the British "Engineering" discusses the technical press, its definition, sphere, functions, value to the engineer, its relation to industry, and the kind of industrial support needed. Two pages. ("Mechanical Engineering," Dec. 1953, page 967)

ALLIS-CHALMERS Reduction and Separation Equipment



Speeds Subsequent Grinding Two to Four Times

Looking for a way to speed your product reduction? If you are not pre-mill flaking, your procedure is not as efficient . . . not as fast as it could be.

By compacting mill feed into broad surfaced flakes, the Allis-Chalmers flaking mill makes the job of your impact mill much easier. The principle is basic . . . flakes shatter more readily than other forms of material. In actual plant operation, doubled, tripled, even quadrupled impact mill capacities have been credited to pre-mill flaking with the Allis-Chalmers flaking mill.

Pre-mill flaking is representative of the adaptation of Allis-Chalmers integrated equipment and engineering . . . adaptations that pay off in high production, top quality products and low processing costs. For further information, contact your nearby A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4216

Circle is an Allis-Chalmers trademark.

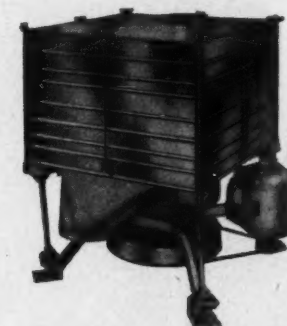
ALLIS-CHALMERS

Chemical Milling and Processing Equipment



Style N ROLLER MILLS

In the Allis-Chalmers three stage roller mill there is no excessive shattering . . . no size-destroying impact. Each progressively finer grinding is extremely gentle. Fines are kept at a minimum. Yield is greatly increased. To meet varying requirements, Style N roller mills are also available in one pair and two pair high types.



Circle SIFTER

Stacked decks save space! The Circle sifter, utilizing gyratory motion, provides the screen area of a single deck-type screen requiring *four times* the floor space. Flexible capacity, quick product changeover and positive method of tensioning screen are other advantages of the stacked deck design.

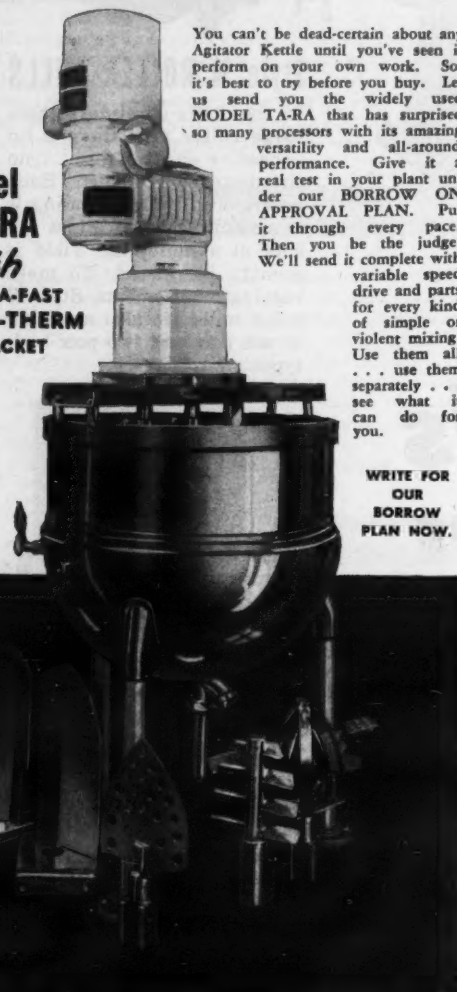


When inquiring check CP 6413 on handy form, pgs. 2-3

Got mixing problems?

Borrow and *Try* this famous Agitator Kettle

Model
TA-RA
with
EXTRA-FAST
ROTA-THERM
JACKET



You can't be dead-certain about any Agitator Kettle until you've seen it perform on your own work. So, it's best to try before you buy. Let us send you the widely used MODEL TA-RA that has surprised so many processors with its amazing versatility and all-around performance. Give it a real test in your plant under our BORROW ON APPROVAL PLAN. Put it through every pace. Then you be the judge. We'll send it complete with variable speed drive and parts for every kind of simple or violent mixing. Use them all . . . use them separately . . . see what it can do for you.

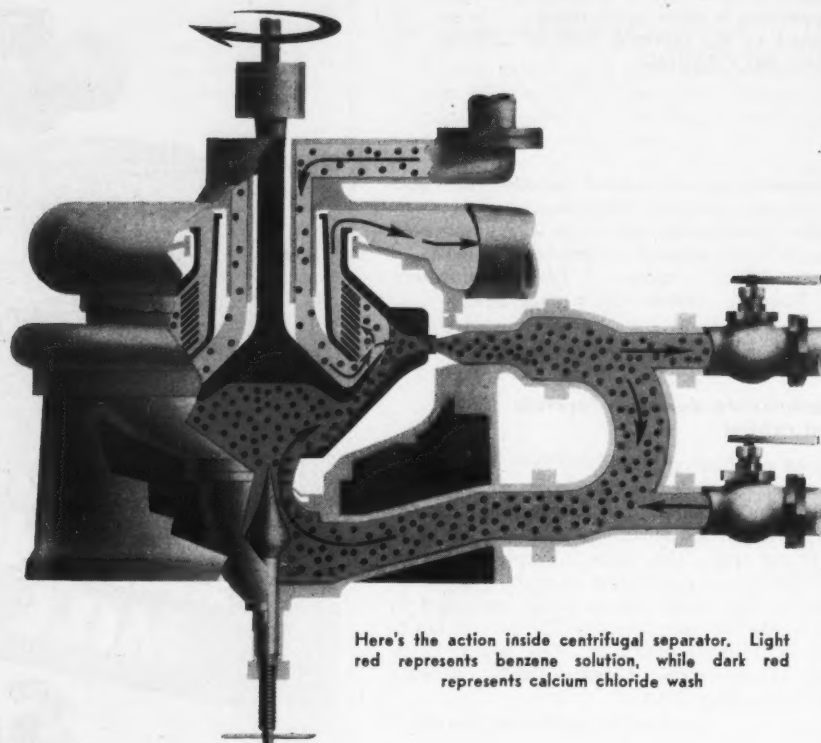
WRITE FOR
OUR
BORROW
PLAN NOW.

GROEN MFG. CO.

4531 W. Armitage Ave., CHICAGO 39, ILL.
30 CHURCH ST. (HALF A CENTURY OF FINE KETTLES) NEW YORK 7
7 FRONT STREET, SAN FRANCISCO 11

When inquiring check CP 6414 on handy form, pgs. 2-3

processing
equipment



Here's the action inside centrifugal separator. Light red represents benzene solution, while dark red represents calcium chloride wash

valuable solubles were lost in settling; **Centrifugal Separation** saves almost all

Continuous process recovers 48 gal more for every 2000 gal handled, thereby paying for itself in less than a month

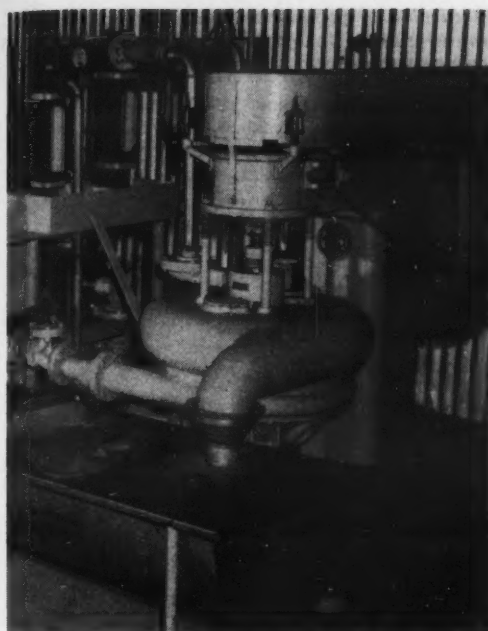
Problem: Manufacturer found it advisable to remove finely dispersed carbonaceous particles from process solution containing benzene and valuable chlorinated hydrocarbons. Settling tank method took out the carbonaceous impurities, but it also caused loss of 50 gal of the valuable solubles for every 2000 gal of solution treated.

Solution: A continuous centrifugal separator

is now used for the separation. Calcium chloride wash, insoluble with benzene and heavier than it, takes the particles out of the solution and carries them away. At the same time it prevents the benzene solution from straying into the underflow or being carried by the particles.

Referring to the drawing, feed to the separator enters at top and passes down along whirling rotor (heavy black portion). It contacts the wash solution (dark red) at the bottom, where the solids are thrown out by centrifugal force. Clear solution of benzene and chlorinated hydrocarbons (light red) passes up and out.

The separator's "return-flow" principle—recycling of some the underflow slurry—helps to stabilize the interface between the benzene solution and the calcium chloride wash. It also is responsible for



Centrifugal separator installation

separator's ability to operate continuously; even though underflow builds up to a high solids concentration, the nozzles don't clog. The simple external valves can be set to assure maximum recovery of valuable solubles.

Results: Loss of valuable solubles has been reduced to only two gal for every 2000 gal processed. This difference in recovery is enough to pay for the separator installation in a month.

(Separator was supplied by Merco Centrifugal Co., Dept. CP, 150 Green St., San Francisco, Calif. . . or for more information reader may simply check CP 6415 on handy form located between pages 2 and 3.)

Glassed-steel packed columns now a standard item

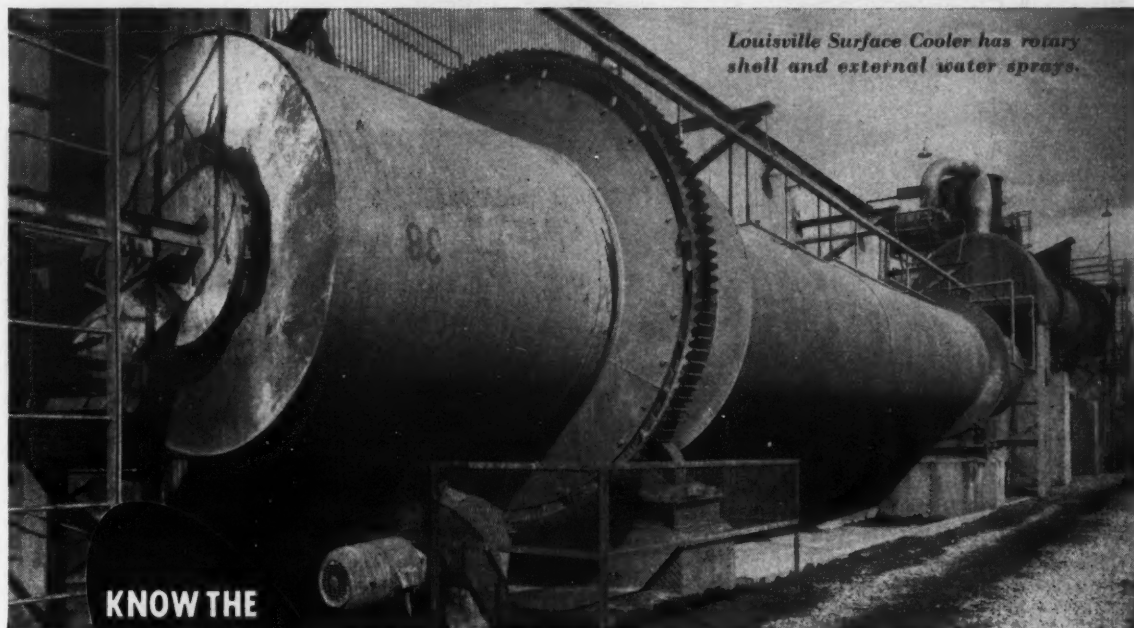
Standardized glassed-steel packed columns have interchangeable parts, permitting greater flexibility of design and faster delivery from fabricator. Glassing gives unit resistance to both acids and alkalis. Columns are said to be ideal for processing of sulfuric and hydrochloric acids, their derivatives, and chemicals where even the slightest metal contamination is undesirable.

Replacing similar units, which had to be custom built, columns are available in diameters ranging from two to 48 inches.

(Standardized glass-steel packed column is a development of The Pfaudler Co., Dept. CP, 1000 West Ave., Rochester, N.Y. . . or for more information reader may simply check CP 6416 on handy form located between pages 2 and 3.)



Louisville Cooler does satisfactory job at low cost for nationally known chemical manufacturer . . .



Louisville Surface Cooler has rotary shell and external water sprays.

KNOW THE RESULTS
before you buy!

. . . cooling lumpy calcined material from 1800° Fahr. to 150° Fahr. for further processing. Gentle mechanical handling required to minimize decrepitation.

Each Louisville cooler is "job-fitted" to your special problem—to make your cooling operations effective—to assure dependability of performance that will make the cooler operation pay.

Call in a Louisville engineer for a complete cooling survey. Based on his experience he will recommend one of the three standard Louisville types, a modification, or an entirely new design. *The performance will be pre-determined.* You'll know the results before you buy . . . and the results *must* be better! Write for complete information today.

3 types of Louisville Coolers

- Surface Cooler
- Water Tube Cooler
- Atmospheric Cooler

Other General American Equipment:

Turbo-Mixers, Evaporators,
Dryers, Dewaterers, Towers,
Tanks, Filters, Pressure Vessels



Louisville Drying Machinery Unit

Over 50 years of creative drying engineering
GENERAL AMERICAN TRANSPORTATION CORPORATION

Dryer Sales Office: Hoffman Bldg., 139 So. Fourth Street
Louisville 2, Kentucky

General Offices: 135 South La Salle Street, Chicago 90, Illinois

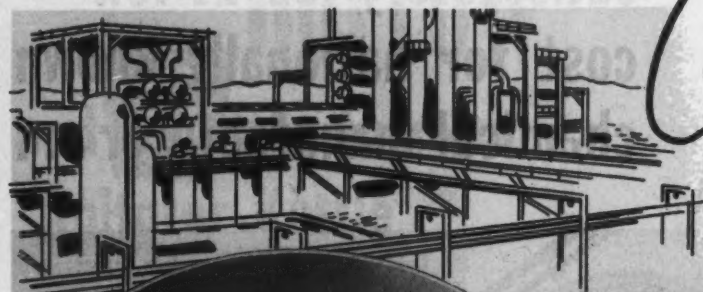
Offices in all principal cities

In Canada: Canadian Locomotive Company, Ltd.
Kingston, Ontario

When inquiring check CP 6417 on handy form, pgs. 2-3

HAVE YOU PROBLEMS IN PRODUCING

Catalysts?



... then find out how
SIMPSON MIX-MULLERS
can increase production and
improve your end product!

**DO YOU REALLY KNOW
WHAT MULLING IS...**

Watch the practiced technique of a chemist's mortar and pestle—the intensive smearing and rubbing action—and basically, **THAT'S MULLING!** Mulling with a Simpson Mix-Muller utilizes a special pair of revolving mullers and plows mounted on a stationary pan. The mullers are adjustable and are supported by rocker arms so that they can be free to ride on the material—creating a true mulling action as they revolve... eliminating balling and quickly developing maximum blending of the mix.

Simpson Mix-Mullers may be specially equipped for heating and cooling while mixing—for mulling under vacuum or pressure—for corrosive materials—or to function as a reaction vessel.

It takes today's modern technology to profitably produce catalysts that are of uniform quality—that have excellent heat, steam and chemical stability. Speed and accuracy must be combined to assure a better end product at lower cost.

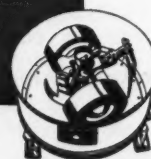
Increasing numbers of catalyst producers are finding that Simpson Mix-Mullers prepare their product much faster and more accurately than with any other method. There is no balling of materials. Blending is completely uniform. The mixing cycle is shorter for comparable results. That's because Simpson Mix-Mullers incorporate the true mulling principle of controlled mixing.

It's true with the production of catalysts... and it's true throughout the chemical process industries... today more Simpson Mix-Mullers are in use than ever before. If you prepare dry—semi-dry—or pasty materials—then consult a National Engineer or send for our latest catalog.



SIMPSON Mix-Muller Division

NATIONAL ENGINEERING CO. 408 Machinery Bldg. Chicago 6, Ill.

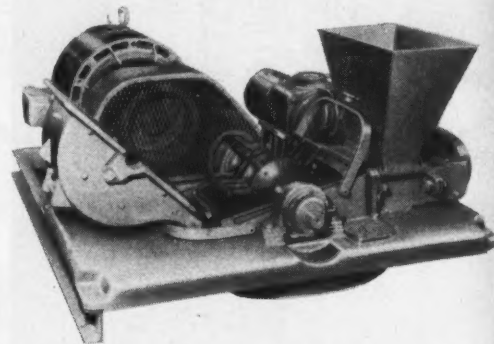


When inquiring check CP 6418 on handy form, pgs. 2-3

PROCESSING

**Accessibility for inspection,
maintenance designed into
compact hammer mill**

Suitable for medium fine grinding of food products, dry colors, filter cakes, and wide variety of the softer materials, compact screen hammer-type pulverizer is readily accessible for inspection, maintenance, or changing screens.

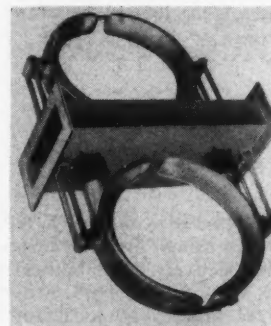


Compact hammer mill is mounted on 3½ x 4' metal base. Cover is shown open

Mill, called Ray-Ducer, is available in three sizes, in 60-70 hp motor range. Mill feed has variable speed drive.

(Hammer mill is a development of Raymond Division, Combustion Engineering, Inc., Dept. CP, 1315 North Branch St., Chicago 22, Ill. ... or check CP 6419 on handy form, pages 2 and 3.)

**Blow rings adjust themselves
to shape of dust filter bags**



Section of air duct with two self-adjusting blow rings is shown

Blow rings which adjust themselves automatically to contours of each filter tube in manufacturer's reverse-jet dust filter are available. Each cast aluminum ring is made in two half-sections, and each section is mounted on the air duct by two flexible rubber tubes. Units are furnished in multiples of 4 to 32, in one cleaning assembly.

Use of this assembly is said to assure perfect ring to cloth contact, compensated for variations in the cloth tubes brought about by changes in humidity, temperature, and pressure.

(Dust filters are made by The Day Company, Dept. CP, 820 Third Ave., N.E., Minneapolis 13, Minn. ... check CP 6420 on pages 2 and 3.)

PROCESSING

Strength characteristics of pulp not damaged when bleaching with chlorine dioxide . . .

compact, continuous, and simple-to-operate process said to be safe and efficient

Uses: For bleaching wood pulp.

Features: Process is said to permit high degree of pulp refinement and brightness, without damaging the strength characteristics. Pulp shrinkage is reduced during refinement operations. It is reported that woods can be used which were not previously suitable for producing bleached pulp.

Description: Chlorine dioxide is generated from acidified chlorates by the reducing action of sulfur dioxide. Generator is compact and possible to house within the existing buildings of most bleach plants. Generating rate may be varied by changing chemical supply feed rate and may be started or stopped at will. Process is said to be most efficient and safest yet developed for commercial use.

Transportable pilot plant unit is available for tests. Its output may be used for pulp bleaching on experimental or laboratory scale.

(Chlorine dioxide bleaching process is development of Pennsylvania Salt Mfg. Co., Dept. CP, 1000 Widener Building, Philadelphia 7, Pa. . . or for more information check CP 6421 on handy form, pages 2 and 3.)

Tank jacket assures even heat throughout impregnation unit . . .

system gets impregnant deep by using vacuum followed by 100 psi pressure

Uses: For impregnation of rotors, stators, motor windings, condensers, capacitors and other electronic and electrical gear that must be made according to joint Army and Navy specifications.

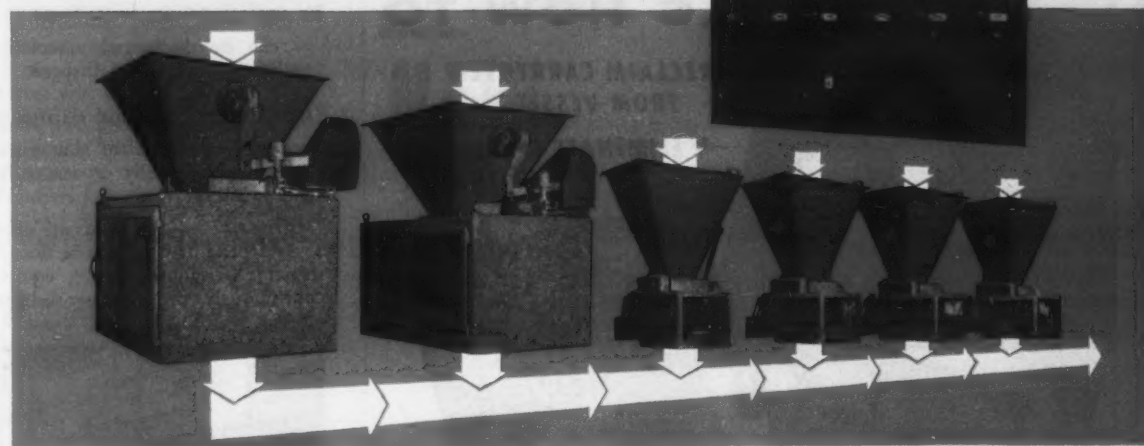
Features: Electrically heated vapors circulate within jacket, heating impregnating tank evenly throughout entire length and eliminating local hot spots.

Description: Vacuum impregnation unit consists of combination vacuum-pressure vessel in which impregnating takes place, and built-in reservoir on same frame, for storage of impregnant. Impregnating tank is jacketed and operates at temperatures up to 300°F.

Built-in vacuum system evacuates tank, and heat aids in removing all traces of air and moisture clinging to surfaces of objects to be impregnated. When fully evacuated, a valve admits impregnant to tank. Up to 100 psi can then be used to force material more deeply into objects being impregnated.

(Impregnation unit is a development of the High Vacuum Equipment Corp., Dept. CP, Hingham, Mass. . . or for more information check CP 6422 on handy form, pages 2 and 3.)

PUSH BUTTON CONTROL . . .

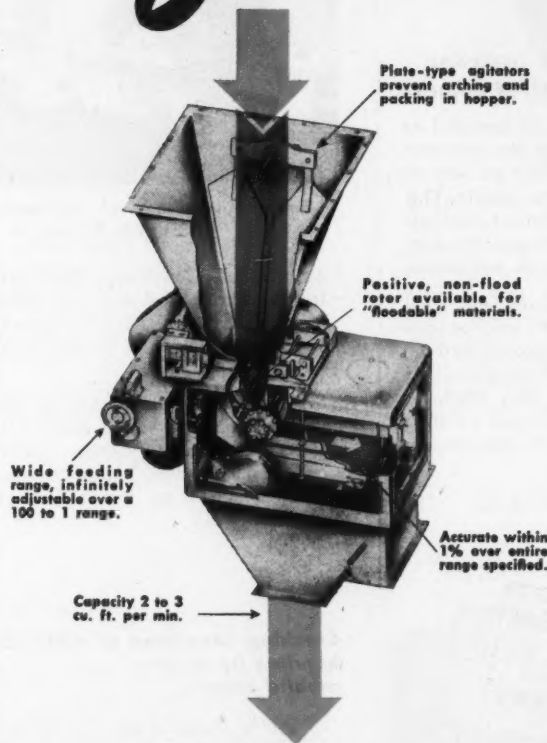


for Continuous compounding of dry materials

This six-feeder production line, built for one of the country's leading processors of fertilizers, is designed for complete push button control from a central control panel. The OMEGA BELT GRAVIMETRIC FEEDERS (Models 44-20A and 50-8) used in this system continuously weigh and feed superphosphate, potash, and other chemicals at a high production rate. Each feeder is totally enclosed, dust-tight, and built for continuous, accurate operation.

Flexibility, the keynote of the system, is shown by the pin-point control of all equipment from the central control panel. Proper components are selected for each formula, individual feed rates are adjusted by a simple handwheel, and automatic on-off lights show at a glance which feeders are operating. Auto-stop alarm devices prevent improper compounding, and chart recorders tell the overall story of chemicals fed in tons per day.

Find out for yourself how OMEGA continuous process equipment will boost your production and your business . . .



OMEGA
INDUSTRIES THE LAST WORD IN FEEDERS

Send Coupon

OMEGA MACHINE COMPANY

3878 Harris Ave., Providence 1, R. I.

☐ Send Bulletins 35-G5 and 35-F58 describing Omega Belt Gravimetric (Weighing) Feeders. ☐ Have sales engineer call.

Our process problem involves:

☐ Compounding dry materials.
☐ Proportioning liquids and dry materials.

Name

Company

Street

City State

When inquiring check CP 6423 on handy form, pgs. 2-3

NEW BOOK TELLS HOW TO

- ✓ RECLAIM CARRYOVER FROM VESSELS
- ✓ ELIMINATE PIPELINE ENTRAINMENT



INTERNAL
Hi-eF PURIFIER

● Towers, columns, stills, evaporators can be operated at greater efficiency and capacity by following the practices recommended in this booklet. You'll find data on how to prevent valuable solids from leaving process vessels. This booklet also tells how to avoid contamination of distillate and other products with foreign entrainment; and also how to stop contamination of processes with gunk and solids.

● Pipeline entrainment such as dirt, moisture, and gunk in steam, vapor, gas and air lines lower the efficiency of your plant process and equipment. Keep this dangerous material out of your piping systems effectively and inexpensively by following the suggestions outlined in this brochure. This booklet also describes Hi-eF Purifiers, noted for their savings and maintenance-free operation in removing or recovering impurities.

Write for your free copy TODAY!

THE V. D. ANDERSON COMPANY
1939 West 96th Street • Cleveland 2, Ohio

Gentlemen:

Please send free copy of Purifier Bulletin 700.

Name

Address

City

State



ANDERSON

When inquiring check CP 6424 on handy form, pgs. 2-3

PROCESSING

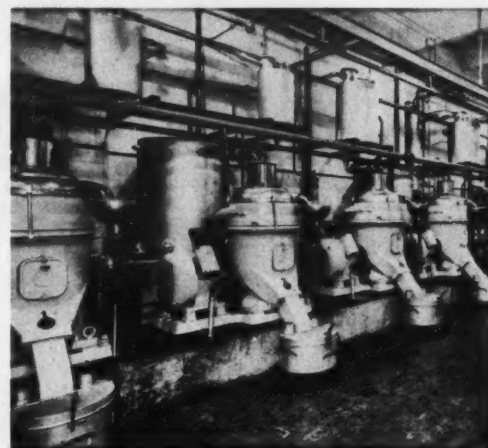
Bowl cleaning downtime eliminated by self-cleaning centrifuge . . .

can be discharged automatically or manually while operating full-speed

Uses: Designed for clarifying oils or liquids.

Features: Sludge of any viscosity can be discharged automatically or manually from separating bowl, while machine is operating at full speed.

Description: Separators are manufactured in three sizes, depending on job to be done. Because of automatic self-cleaning feature, equipment can operate continuously, preventing production losses due to



European installation of self-cleaning centrifuges, clarifying fats and oils

bowl cleaning downtime. Bowl cleaning is accomplished by turning 4-way valve through 360° cycle. Operation takes less than 10 seconds. Maintenance costs are reported to be low. Machines are of Danish make.

(Separators are available through the Pitmar Centrifugal Machine Corporation, Dept. CP, 10 East Fayette Street, Baltimore, Maryland . . . or for more information on manufacturer's product, reader may simply check CP 6425 on handy form located between pages 2 and 3.)

Crushing, screening of materials handled by in-line, mobile plant . . .

use in chemical and allied fields seen for unit which includes all conveyors, accessories

Uses: For crushing and screening of various materials. Designed primarily for use in gravel pits, use in the chemical and allied fields is feasible.

Features: Basic flow of material in unit is inline, longitudinally, with the axis of the plant, material being fed into rear and discharged at front end. Plant is equipped with largest components possible,

PUMPS for the PROCESSING

INDUSTRY

...that SERVE WELL and LAST!

CORROSION EROSION or other PHYSIO-CHEMICAL PROBLEMS

Fig. 19,488

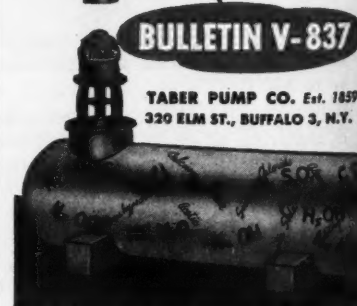
To Chemical Engineers who cope with such problems: Taber builds pumps of metals or alloys which the Engineer has found effectively resistant to the specific chemical solution to be pumped.

Stability of Taber design never gives way to design for selling purposes. You can get repair parts or duplicate Taber pumps for years.

SUGGESTION:
On your business stationery, WRITE FOR:

BULLETIN V-837

TABER PUMP CO. Est. 1859
320 ELM ST., BUFFALO 3, N.Y.



When inquiring check CP 6426 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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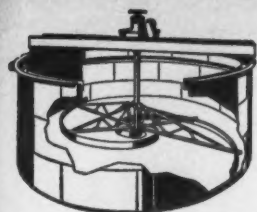
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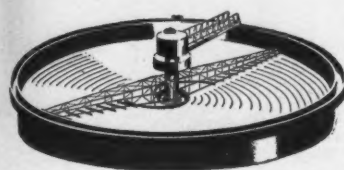
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ESSING



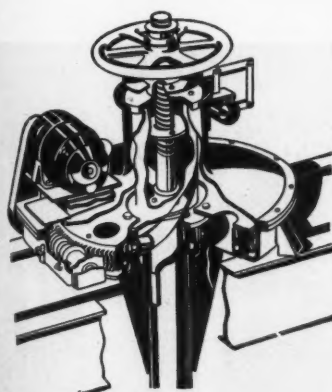
Small-Diameter, Beam-Type Unit



Large-Diameter, Center-Column Unit

"Auto-Raise"

THICKENERS AND CLARIFIERS



One of the distinctive features of Hardinge Thickeners is the "Auto-Raise" driving mechanism, which automatically lifts the scraper away from the overload or obstruction in the tank bottom — eliminating costly breakdowns and delays. Bulletin 31-D-13.

HARDINGE
COMPANY, INCORPORATED

YONKERS, PENNSYLVANIA • 248 Arch St. • Main Office and Works
New York • Toronto • Chicago • Hibbing • St. Louis • Salt Lake City • San Francisco

When inquiring check CP 6427
on handy form, pgs. 2-3

FEBRUARY, 1954

PROCESSING

still complying with weight limitations. It is said to have been designed specifically for those areas where weight restrictions are severe, and where frequent and rapid moves are necessary, as it can be pulled in and out of position without dismantling or removal of conveyors and other accessories.

Description: Model 35-S plant consists of a 1036 jaw crusher, a 3024 double roll crusher, 2½ deck vibrator screen and necessary conveyors. Included on the plant is a 30G (30") mechanical feeder, or a 30" x 40' heavy service swivel feed conveyor to conveyor on plant, with 30G feeder at lower end.



For use in weight-restricted areas where rapid moves are necessary

The 16" x 6' channel frame sand reject conveyor is optional. All units are assembled on a welded steel truck frame which in turn is mounted on a rear equalizer and single front dolly with 12 pneumatic tires.

Total weight of plant varies between 56,350 lb and 58,550 lb, depending on whether bolster with wheels or semi-trailer hitch is used on front end. Travel length of plant (with delivery conveyor folded) is approximately 39'. Travel width is 8' 10" and height is 12' 6".

(Product of Pioneer Engineering Works, subsidiary of Poor & Co., Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. . . or for more information check CP 6428 on handy form located between pages 2 and 3.)

Stress quick cleaning of retractable-tank filter

Heavy-duty retractable-tank filter which can be opened and cleaned quickly is described in 4-page bulletin. Piping does not have to be disconnected when retracting the filter shell. Unit is available in sizes ranging from 100 to 2000 sq ft filter area. Photographs in bulletin reveal how filter is built and operated.

Bul 501 is issued by Sparkler Manufacturing Co., Dept. CP, Mundelein, Ill. When inquiring about manufacturer's product, reader may simply specify CP 6429 on handy Reader Service slip located between pages 2 and 3.

HEAT UP STEAM UNITS 8 TIMES FASTER With NEW HEAT-KWIK

Super-Silvertop Steam Traps



WRITE FOR OUR
NEW CATALOG

Today!

● Here's the most profitable steam trap news to reach your ears in many years! The new Heat-Kwiks vent air out of steam consuming units *eight times* faster than ordinary inverted bucket traps . . . three times faster than air eliminator or blast type traps. This faster removal of air means faster heating up . . . more production . . . lower steam consumption . . . and reduction in trap capacity factor. Use Heat-Kwik Super-Silvertops on every steam-using unit. You'll get heat much faster . . . and reduce steam costs. The savings will quickly pay for your Heat-Kwik investment.

SUPER-SILVERTOPS

Quality Steam Traps Since 1886



THE V. D. ANDERSON COMPANY
1932 West 96th Street • Cleveland 2, Ohio

Gentlemen: Without obligation please send me the following information:

- ☐ Bulletin 1153 (Heat-Kwik Steam Traps)
- ☐ Solving Steam Trap Problems (36-page catalog)
- ☐ Bulletins on Hi-E Purifiers

Name
Address
City State

ANDERSON

When inquiring check CP 6430 on handy form, pgs. 2-3

PROCESSING

Working capacity of lab-size mixer is .34 cu ft . . .

all product-contacting parts are 304 stainless

Uses: Lab-model mixer (0.34 cu ft working capacity) is for mixing and blending operations in chemical, food, and allied fields.

Features: All parts contacting product are 304 stainless steel.

Description: Unit is jacketed for 15 psi steam, and has hinged cover and dust-tight discharge gate. Ribbon and paddle agitator, as well as trough, are ground smooth and polished.

Mixer can be furnished with either floor or table stand, and is supplied with either fractional-hp direct-coupled gearmotor or with variable-speed motor.

(All-purpose lab mixer is made by The Young Machinery Company, Dept. CP, Muncy, Pa. . . or for more information check CP 6431 on handy form, pages 2 and 3.)

Samples paper pulp as it's being blown from digester . . .

timed valve shows conditions at various digester levels

Uses: Automatically takes pulp samples at timed intervals from digester blow line, while digester is being blown.

Features: Makes it possible to check pulp conditions at various levels as blown, since time and digester level coordinate. Timer can also be set to secure a small or large sample.

Description: Sample receiver is connected to blow line by small pipe and timer-actuated valve. When ready to blow, main switch is closed, setting timer into motion. Timer then controls opening and closing of the sampling valve which in turn controls position of sampler piston that allows stock sample to flow from blow-pipe into receiver.

(Murco-Mosinee digester stock sampler is a product of D. J. Murray Manufacturing Co., Dept. CP, 1002-1024 Third St., Wausau, Wis. . . or for more information check CP 6432, pages 2 and 3.)

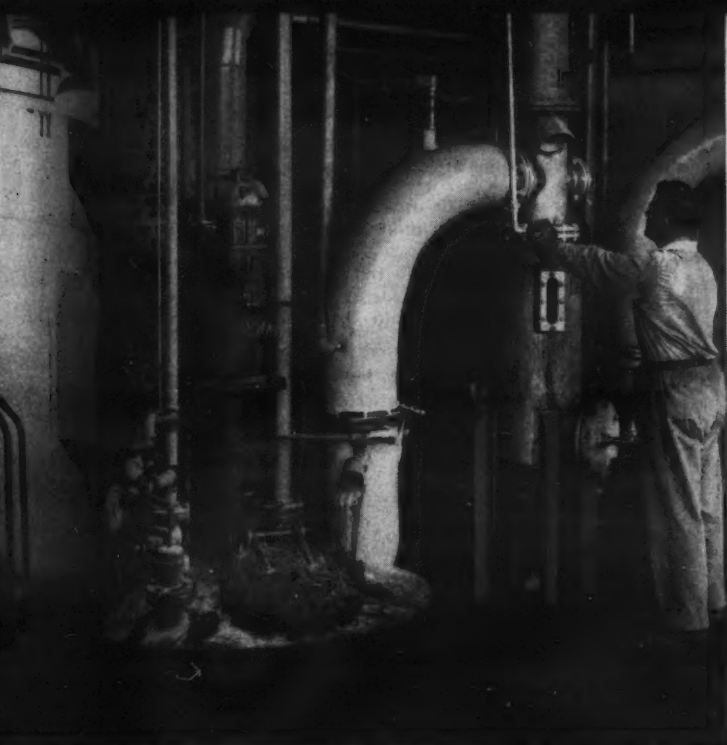
Stainless Steel Kettles

guard against contamination in solvent

HERE is the lower part of a 2500-gallon kettle as the operator checks the burners in a furnace unit. The Stainless Steel kettle extends from the ceiling to a short distance above the operator's head.



THIS VIEW of the varnish room at Socony Paint Products Company shows the tops of several Stainless Steel kettles. At the left is the 150-gallon pilot kettle. In the center is one of the large 2500-gallon kettles and two medium sized kettles are in the background. A Stainless Steel cooler may be seen above the large kettle.



THE CONDENSER of a 600-gallon Stainless Steel kettle is being checked by the operator. Two Stainless Steel coolers may be seen overhead.



HERE the operator draws a sample from the 150-gallon Stainless Steel pilot kettle.

processing of varnishes and synthetic resins

• Kettles of all sizes—from 150-gallon pilot vessels up to 2,500-gallon sizes are used by Socony Paint Products Company, Metuchen, N. J. in production of a complete line of high-quality varnishes and synthetic enamel vehicles. And no matter how large or how small, the kettles are Stainless Steel.

That's because Stainless Steel is the one material best able to prevent contamination and accompanying discoloration due to the corrosive nature of the acid-type materials, especially at high temperatures. Cooking temperatures in the totally-enclosed Stainless Steel kettles range to a maximum of 590° F., depending upon the vehicle being manufactured.

Socony employs the solvent process in its operation. As the solvent evaporates, its vapor acts as a carrier for the removal of various products of reaction. Stainless

Steel condensers return the solvent to the kettle, while water and other reaction products are collected in a receiver below the condenser.

Stainless Steel's durability and its ability to stand up in the face of severe corrosion also are demonstrated in pipe and pumps used to transfer materials from storage tanks to kettles and from kettles to thinning tanks.

Socony's operation is typical of the performance of Stainless Steel on a wide variety of chemical processing jobs. As a material, it offers such a unique combination of benefits that, in many places, you cannot afford to overlook it.

And for the finest performance from Stainless Steel equipment, make sure it is fabricated from perfected, service-tested U.S.S. Stainless Steel.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS



U N I T E D S T A T E S S T E E L

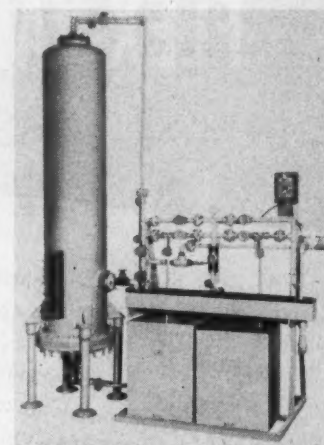
PROCESSING

**Demineralized water
has resistance of
20 million ohms/cc . . .**

weakly ionizable impurities
effectively removed

Recently announced is additional line of mixed bed water demineralizers. Reported to contain latest engineering developments in ion-exchange water purification process, units are said to include an improved system for regenerating the purifying resins after exhaustion.

Capacities range from 50 to 2500 gal of mineral-free water per hr. Impurities such as sodium, calcium, potassium, magnesium, iron, copper, chlorides, sulfates, and bicarbonates are eliminated. Weakly ionizable impurities such as silica



Single column demineralizer with accessories

and carbon dioxide are also said to be removed. Result is effluent water of high electrical resistance, often up to 20,000,000 ohms/cc. Cost of demineralized water is reported to be low.

(Mixed bed water demineralizers are products of Barnstead Still and Sterilizer Company, Department CP, 239 Lanesville Terrace, Forest Hills 31, Massachusetts . . . or for more information reader may simply check CP 6433 on convenient Reader Service form located between pages two and three.)

For more information on product at left, specify CP 6434 . . . see information request blank between pages 2 - 3.

NOT EVEN HOT SULPHURIC ACID affects the efficiency of these FLEX-VALVES

A solution of copper sulphate with a high concentration of sulphuric acid—at approximately 180° F—has failed to give these valves trouble in more than two years. At a leading smelting and refining company*, where precious metals are refined and copper sulphate is produced, FLEX-VALVES have once again proven the superiority of their simple construction and corrosion resistant characteristics. If you have a fluid that's "too hot to handle" for ordinary valves, specify trouble-free FLEX-VALVE. Write for catalog No. FL 382.

*name available on request.

Exclusive FLEX-VALVE Features (Pat'd and Pat. Pending)

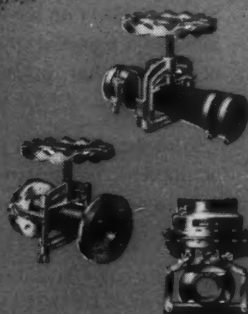
- Will outwear any metal valve on abrasive service. Proven minimum 11 to 1 life over metal • Excellent control characteristics in first 1/3 of travel • Tight on grits up to 1/8"
- Valve body available in pure gum rubber, neoprene, butyl, buna-n, buna-s, food stock and special compounds • Full pipe capacity • Will not freeze up in outdoor service • Complete closure for bubble-air tightness • No obstruction, pockets or internal parts.

**Your Money Back
if it Plugs.**

Representatives in Principal Cities

Farris FLEXIBLE VALVE CORP.
105 COMMERCIAL AVE., PALISADES PARK, N. J., U.S.A.

Offices: FARRIS ENGINEERING CORP. • FARRIS STATION CORP. • FARRIS HYDROSEAL CORP. • FARRIS HYDROTURBINE CORP. • FARRIS PICKERING GOVERNOR CO.



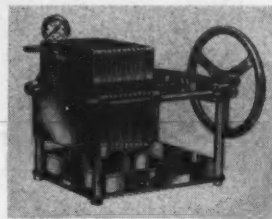
PROCESSING

Design filter for pyrogen and bacterial retentive work . . .

but it has other uses, too — and it's available in stainless steel or clear plastic

Uses: Built primarily for pyrogen and bacterial retentive work, filter may also be used for filtration of perfumes, essential oils, drugs, pharmaceuticals, and chemicals.

Features: Available in highly polished stainless steel, a combination of Lucite clear plastic and stainless steel, or all-Lucite. Advantage of Lucite model (used where sterilization is not required and where temperature does not exceed 120°F) is that product can be inspected during filtration.



Filter takes 8" sq filter sheets

Description: The Model 8-ESS accommodates 8" square asbestos filter sheets. For pyrogen work the design provides for double filtration and includes a stone fiber eliminator.

A 4" model, the 4-ESS, is available for smaller-scale filtration.

(Filters are manufactured by Ertel Engineering Corporation, Dept. CP, 90 Front St., Kingston, N. Y. . . . or for more information check CP 6436 on handy form, pages 2 and 3.)

Describes method for dust control determination

Simplified test method for dust control determination is described in eight-page booklet. The method is used to determine under actual operating conditions, all variables involved in specific dust problems. Test furnishes information on amount of dust that can be collected plus an accurate measure of amount of dust in system. It determines most suitable type of equipment needed to handle problem.

Photographs illustrate how test is conducted. The single tube used for testing is a standard tube as used in a completed collector, and is conveniently inserted into any duct system. It is said to be indicative in every way of the performance of multiple tube units.

Booklet also contains photographs of a few installations showing equipment used and accompanied by operating data.

Booklet, "A Simplified Test Method For Dust Control Determination", is available from Dustex Corp., Dept. CP, 1785 Waldon Ave., Buffalo 25, New York . . . When inquiring specify CP 6437 on convenient Reader Service slip located between pages two and three.

When inquiring check CP 6435 on handy form, pgs. 2-3

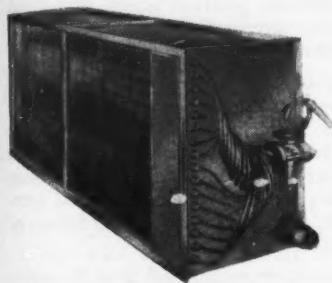
PROCESSING

Stainless steel coils in heat exchanger aid processing . . .

special metals, alloys fight attack of acid-laden air

Uses: For cooling or heating air containing acid vapors.

Features: Units can be made in stainless steel, a combination of dissimilar metals, or special metals and alloys.



Description: Fin type coils can be furnished gas tight, as illustrated, or standard type. Pipe coils can be designed for individual requirements from all types of stainless steel, from a combination of dissimilar metals, or from aluminum, Monel, copper, nickel, or lead.

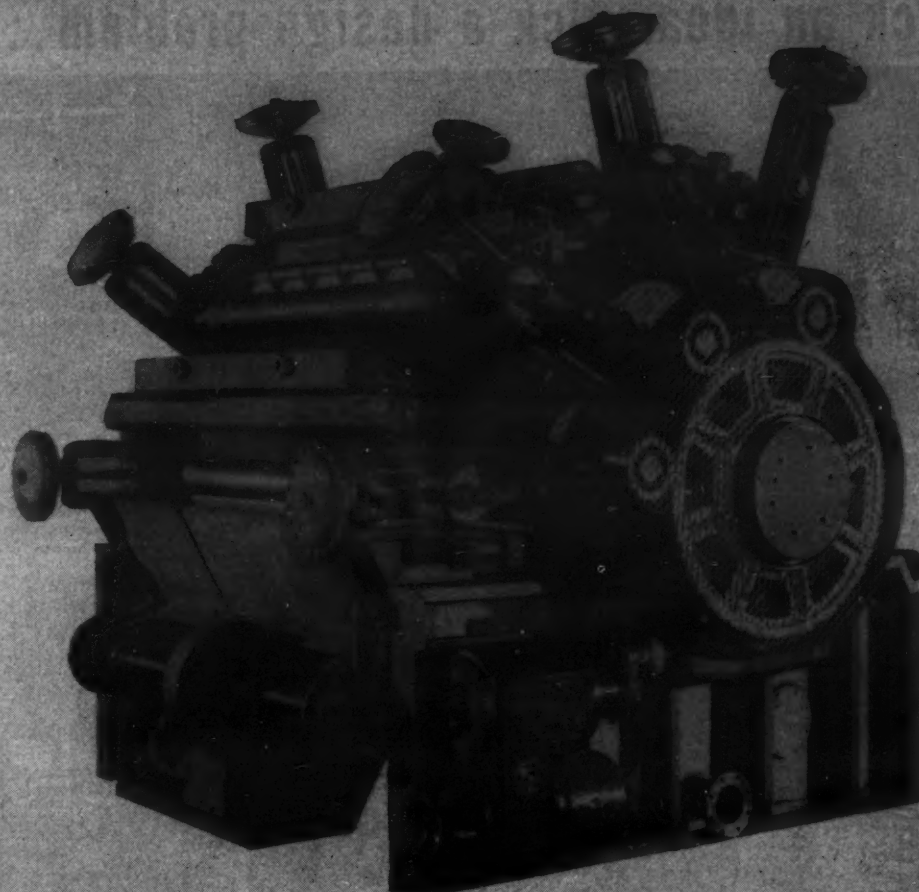
(Heat exchanger coils are produced by Rempe Co., Dept. CP, 340 N. Sacramento Blvd., Chicago 12, Ill. . . . or for more information check CP 6438, pages 2 and 3.)

Design and construction of wood tanks

Illustrated 4-page bulletin shows types of wood equipment available for special processing needs. Among items listed are wood pipes, agitators, filter frames, acid tanks, and suction filters.

Bul "Arrow Tanks" is issued by Arrow Tank Co. Inc., Dept. CP, 16 Barnett St., Buffalo 15, N. Y. Specify CP 6439 on handy form, pages 2 and 3.

For more information on product at right, specify CP 6440 . . . see information request blank between pages 2 - 3.



YES! THIS TOO IS A CONTINUOUS VACUUM FILTER FOR USE IN THE PRODUCTION OF SODA ASH

PROBLEM: To dewater to as low as possible moisture content a sodium bicarbonate filter cake and to wash the cake free of ammonium chloride.

EIMCO'S ANSWER: The unit shown above — The Eimco Sodium Bicarb Filter featuring:

1. Special heavy-duty construction throughout.
2. Special back-wash feature to prevent blinding of filter media.
3. Special wash system to provide uniform wash water distribution.
4. Special streamlined drainage construction with extra large valve to insure maximum removal of wash liquor and low cake moisture.

5. Special heavy-duty press rolls, to provide additional cake compression in the removal of moisture from cake.

This filter is used in the production of soda ash by the Solvay Process, and in order to have a better than average product the filter is equipped to remove a greater percentage of impurities through proper washing and moisture reduction than ever possible before.

This unit is typical of the specialized fields for which Eimco equipment is designed and built. When you have a problem in filtration we offer the services of men who know the filtration business, plus laboratory and research service and the experience of the Eimco Corporation, serving process industries for more than a half a century.



THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.

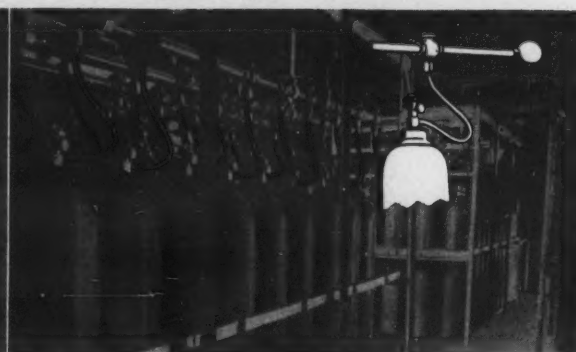
Export Office: Eimco Bldg., 52 South St., New York City.

You Can't Beat An Eimco

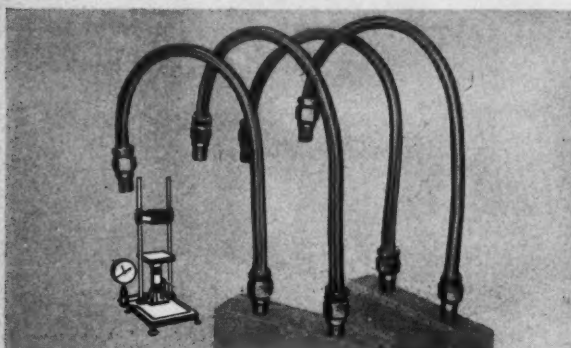
Pick an idea—lick a design problem...



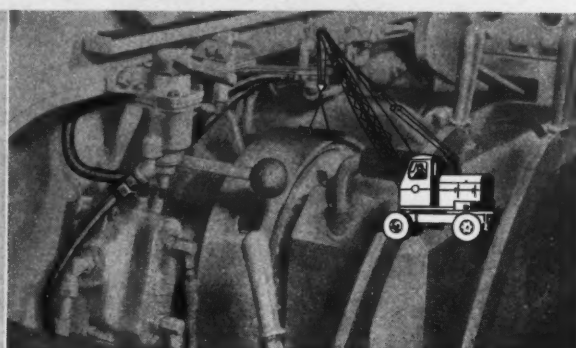
END VIBRATION AND LEAKAGE. Titeflex® metal hose, used as fill and drain lines of SEC Synthetic Cleaning Units, kills vibration and prevents solvent leakage at fittings. Tough, wear-and-corrosion-resistant Titeflex is just as effective in handling steam, oil, lubricants, fuels, gases, brine, acids, compressed air or oxygen. Design and construction of Titeflex assure trouble-free performance. Excellent for projects involving extreme configurations.



CONTROL CRITICAL PRESSURES. How would you connect 280 cylinders of fire-extinguishing carbon dioxide at 850 psi to line? Walter Kidde & Company licked this problem with Titeflex flexible metal hose which met all insurance standards and withstood rigid application requirements. Titeflex also conveys hundreds of different fluids under as many different temperature and pressure conditions. Resists corrosion, vibration, physical abuse.



CONDUCT STEAM SAFELY. Plates for Carver Laboratory Press carry steam up to 200 psi (nearly 400°F.) for heating—water for cooling. The connections are flexible, pressure-safe Titeflex. Braiding gives extra strength. Added problems of vibration, pulsation, continuous movement, corrosion or abrasion make Titeflex invaluable in scores of other applications.



FIGHT FATIGUE AND WEAR. Titeflex metal hose eliminated maintenance on air control lines of Unit Mobile Cranes. All-metal construction, with braiding woven directly upon the hose, provides great strength and resistance to vibration, corrosion, wear and abuse. Flexibility of Titeflex permits simplified assembly even where space configurations are problems.

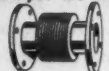
THE USES FOR TITEFLEX® seamed flexible metal hose and Uniflex seamless flexible metal hose are limited only by engineering ingenuity. And Titeflex design engineers—working with customers—develop new applications daily. Somewhere in your plant or on your products Titeflex can improve operation and maintenance—or simplify a design problem. Our new 48-page *Metal Hose Catalog No. 200* shows you how and why. To get your free copy, simply mail the coupon.

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Recent Books

LATEX IN INDUSTRY

Reviewed by Leonard A. Wobler
Technical Coordinator-Latex
Firestone Tire & Rubber Co.

If one compares Dr. Royce J. Noble's second edition of "Latex in Industry" with the first, he has a measure of the tremendous growth of the latex industry in recent years. The original edition, which appeared in 1936, contained 384 pages whereas the present volume, which covers the practical aspects of natural and synthetic latex preparation, application, and testing, adds up to a weighty tome of 912 pages.

Part I, consisting of 10 chapters, deals with latex preparation, properties and compounding. Such subjects as sources, preservation, shipment, and concentration of natural latex are also described. Synthetic latices, rubber dispersions, and vulcanized latex are handled in this section as well as general compounding practice, coagulation and vulcanization of latex rubber deposits.

The next fourteen chapters constitute Part II, which covers the industrial applications of latex. Detailed information on all the important latex processes are given, such as impregnation, spreading, dipping, casting, electrodeposition, foamed latex, thread, and adhesives.

Part III has a 102-page chapter dealing with testing of latex and latex compounds. Included in this section are detailed methods for sampling and determination of such properties as total solids, D.R.C., rubber hydrocarbon, coagulum, strainability, sludge, alkalinity, KOH number, mechanical and chemical stability, surface tension, and viscosity.

Procedures for preparing and testing latex films are also included. Such tests on films as stress-strain properties, aging, specific gravity, water absorption, Mooney viscosity, ash, extractables, sulfur, copper and manganese are included. Procedures are given for identification of natural and synthetic rubbers and also for control testing of common compounding materials.

Supporting the text are extensive bibliographies, author and subject indices, and a complete listing of journals and their abbreviations.

The chapters on compounding and dipping are especially authoritative. The wealth of information presented in these chapters reflects the author's stature in these fields.

In the reviewer's opinion, the chapter on "Porous Rubber", which included foamed latex, was given too light treatment, especially since foamed latex is becoming so important and already accounts for about 60 per cent of the total latex used. The text on rubber thread was also considered to be too generalized in comparison to some of the other processes described. It should also be mentioned that this book is directed toward the practical man and therefore contains little information which is of value for the theorist.

"Latex in Industry" is considered to be a truly valu-

When inquiring check CP 6441 on handy form, pgs. 2-3

able addition to our latex literature. It should find its place as an authoritative reference volume for anyone interested in latex and its application, including such persons as research workers, factory compounders, technical sales personnel, and management.

To obtain "Latex in Industry" remit \$15 direct to Rubber Age, 250 West 57th St., New York 19, N. Y. For more information reader may simply specify CP 6442 on handy Reader Service slip located between pages two and three.

ANALYSIS OF ALUMINUM ALLOYS

Reviewed by M. L. Moss, Assistant Chief
Analytical Chemistry Division
Aluminum Research Laboratories
Aluminum Company of America

This volume, edited by G. H. Osborn and W. Stross, is the result of a joint effort by chemists of The Association of Light Alloy Refiners, a group of firms engaged in the refining of secondary aluminum. It represents a realistic compromise between methods used for referee purposes and methods for production control. Spectroscopic methods, though widely used, have not been included because the authors felt that this subject would require a separate book in itself. Sampling of ingots, castings, and liquid metal is discussed briefly. Procedures for chemical analysis are organized according to alloying elements and impurities, less common elements, and composite schemes for multiple determinations by colorimetric analysis using a single weighed sample. A chapter is devoted to general principles of polarography with detailed procedures for lead and zinc.

The phosphate method for magnesium has been eliminated entirely, and 8-hydroxyquinoline is recommended. A modification of the Regelsberger method for silicon is included, employing gelatin to flocculate the silicic acid. For determining zinc, the quinaldine acid and mercuric potassium thiocyanate methods are recommended. In the latter method, the factor 0.1312 may be somewhat high, recent work indicating that it is closer to 0.1302. Elements separated and determined by electrodeposition include copper, lead, and zinc.

Colorimetry is discussed, with some emphasis on filters, and the archaic thiocyanate method for iron is still recommended.

Although conventional procedures are employed throughout, this book will be highly useful to those chemists directly interested in the analysis of aluminum. It will be particularly helpful to those called upon to analyze an occasional sample because detailed knowledge of this subject is largely concentrated within the aluminum industry.

To obtain "Analysis of Aluminum Alloys" remit \$3.50 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Avenue, New York 10, New York. When inquiring specify CP 6443 on handy form, pages 2 and 3.



HOW TO SUCCEED WHILE YOU'RE STILL YOUNG

IT SURPRISES many people to learn that the average age of the men who respond to our advertisements is closer to forty than to twenty. But it's not hard to understand why this is true!

Most young men are satisfied with their progress in business. Their native ability and energy are enough to win them regular promotions and salary increases. They find success only a matter of time.

But the day comes, often with a shocking suddenness, when this easy and casual progress ends abruptly.

Many a man wakes up with a start in his thirties or forties to find that his income has leveled off, and that promotions have ceased.

"I'm not getting ahead as fast as I should," he says to himself. "Where am I going to be ten years from now?"

Why does this pathetic pattern appear in so many promising careers?

The answer is simple: Sheer ability and energy can carry a man to the mid-way point in business... but only a thorough knowledge of business fundamentals can help him beyond that point.

If you realize that fact while time is still on your side—and act on it—you can succeed while you're still young.

FREE... "FORGING AHEAD IN BUSINESS"

We do not claim that you must have the Alexander Hamilton Course in order to succeed in business. But we do say that you cannot succeed without what is in the Course!

All the Institute does is offer you a convenient and time-saving means of bringing this knowledge to you in your spare time; and in a form that has proved to be practical and effective for more than forty years.

So that you may judge for yourself whether or not you think the Institute can help you, we have published an informative 48-page book titled "Forging Ahead in Business."

We believe that this little book will help any man get down to bed-rock in his thinking; however, there's no cost or obligation for it because—frankly—we've never been able to put a price on it that would reflect its true value. Some men have found a fortune in its pages.

If you would like a complimentary copy of "Forging Ahead in Business," simply sign and return the coupon below. It will be mailed to you promptly.

ALEXANDER HAMILTON INSTITUTE

Dept. 242, 71 West 23rd Street, New York 10, N. Y.
In Canada: 54 Wellington Street, West, Toronto 1, Ont.
Please mail me, without cost, a copy of the 48-page book—
"FORGING AHEAD IN BUSINESS"

Name

Firm Name

Business Address

Position

Home Address



When inquiring check CP 6444 on handy form, pgs. 2-3

Guaranteed
**TO
SHUT
TIGHT***

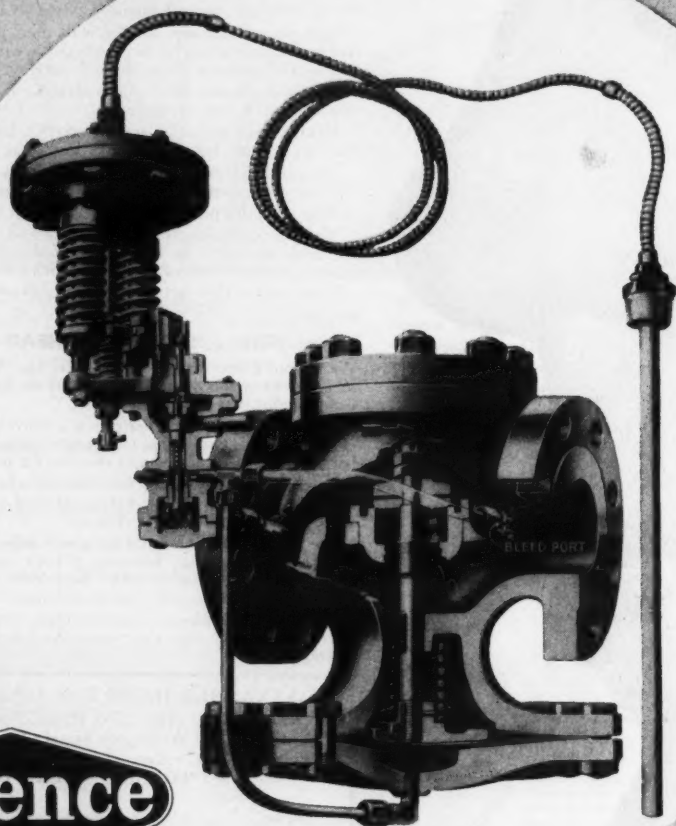
*When equipped with a SECO Metal Seat and Disc on steam service and protected by an approved Strainer, a Spence Regulator is guaranteed to shut tight when the demand for steam ceases.

Expensive steam leaks due to a lack of absolutely tight shutoff are eliminated in Spence Temperature Regulators. Here is why we can make such a guarantee:

First, our temperature regulators are of the single seat design. Seats and discs are made of durable SECO Metal. More than 20 years experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

These plus other design features explain why Spence Temperature Regulators function dependably and accurately year after year without requiring expensive repairs or special attention.

Want more facts? Write for Bulletin T50 giving full details.



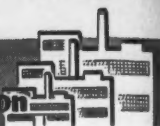
SPENCE
TYPE ET150
Temperature
Regulator

Spence

**SPENCE ENGINEERING
COMPANY, INC.**
WALDEN, NEW YORK

When inquiring check CP 6445 on handy form, pgs. 2-3

Expanding Chemical Production



'53 plastics output sets new record — additional plants scheduled

More plastics raw materials were produced and sold by the industry in 1953 than in any previous year, according to the Bakelite Company, a division of Union Carbide and Carbon Corporation, which predicts that the 1954 production and sales figures will top last year's record.

Bakelite's expansion plan for polyethylene production calls for three plants of Carbide and Carbon Chemicals Co. (another division of Union Carbide and Carbon Corp.) at Texas City and Seadrift, Texas, and Torrance, Calif., each with a rated annual capacity of more than 60 million lb of polyethylene.

Schedule \$20 million polyester unit for Canadian firm

Construction of a \$20 million plant for manufacture of synthetic polyester fiber at Millhaven, Ont., has been announced for Imperial Chemical Industries, Ltd., of Canada. Completion of the plant, about 13 miles west of Kingston, Ont., is expected early next year.

New polyethylene plant in Texas increases Monsanto line

A new polyethylene unit now being constructed at Texas City, Texas will bring Monsanto Chemical Company into polyethylene production.

Scheduled to be on-line by the last quarter of this year, and operated by the firm's Plastics Division, the new facilities are expected to have an annual output of 66 million lb with a 50 per cent increased capacity scheduled for 1957.

Monsanto's Texas Division located there will also supply the Plastics Division unit with raw material.

Add \$15 million plant to facilities for petrochem production

A \$15 million plant for production of petrochemicals has been added to Sun Oil Company's large refinery at Marcus Hook, Pa., near Philadelphia, and is now on-line.

Annual production from the unit is expected to be as much as 19 million gal of benzene, the same quantity of toluene and 15 million gal of mixed xylenes.

Sun Oil Company Limited's Sarnia, Ont., refinery, put on stream late last year, is expected to have a

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Houdry catalytic cracking unit completed this month. The refinery there has a rated capacity of 15,000 bpd.

Set up large research project for agricultural chemicals

As part of a long-range program for agricultural chemicals development, Spencer Chemical Co., Kansas City, Mo., is now constructing a biological laboratory and greenhouse at its Jayhawk Works in Pittsburg, Kansas. The research group expects to screen 500 chemicals a year.

Petrochem research gets extra boost in Massachusetts

Construction has begun on a new petrochemical laboratory on the National Research Corporation's property on Charlemont Street, Newton, Mass. Located near the company's Equipment Division plant, the new building is expected to be in operation in early spring of this year.

Begin building for increased research into pharmaceuticals

Norwich Pharmacal Company is now constructing a million-dollar research center near Norwich, N. Y. Scheduled for completion by November of this year, the new center will provide expanded facilities for the company's medical research as well as for the investigation of industrial and agricultural chemicals.

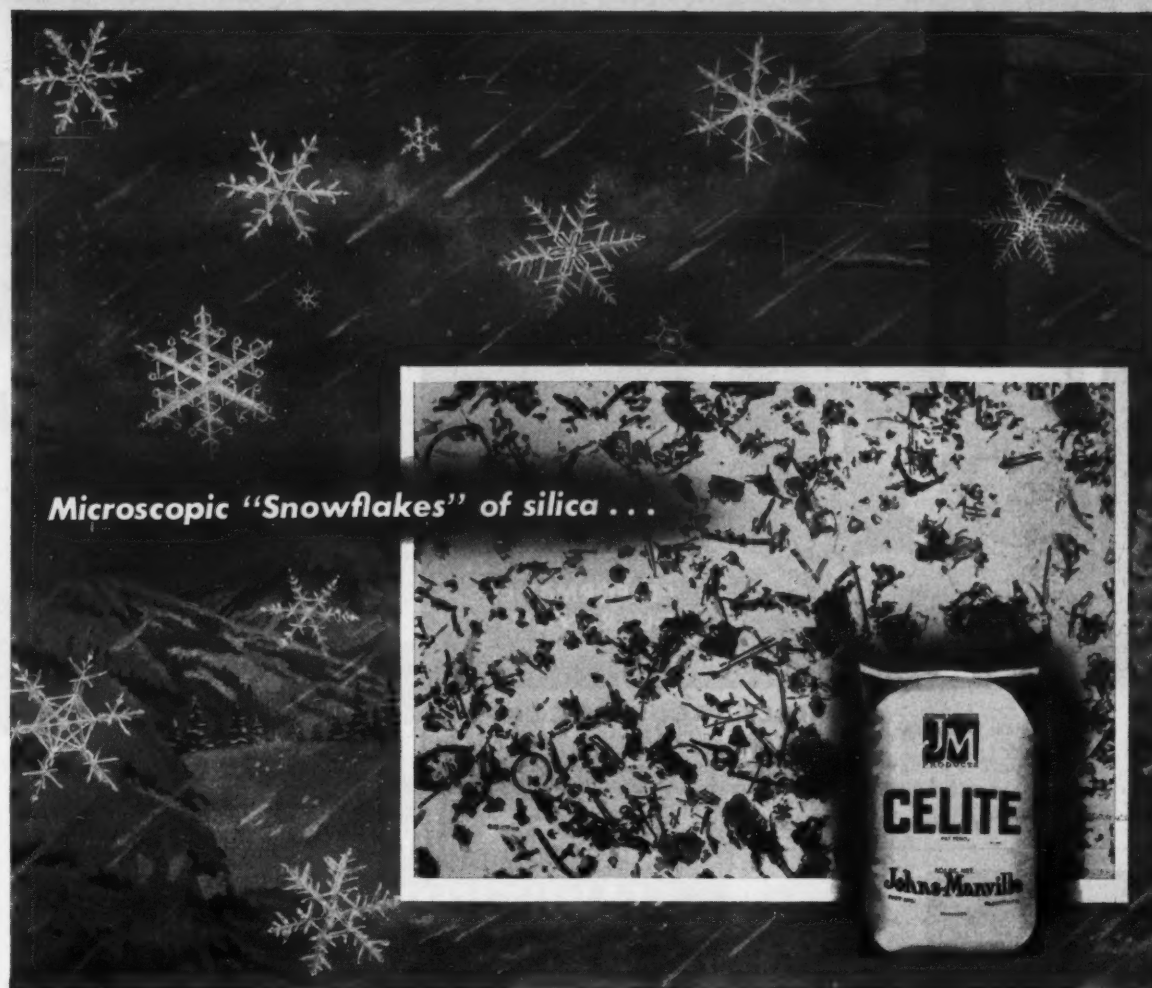
Chlorine-producing unit now on line, increase in soda ash output, too

Wyandotte Chemicals Corporation has placed on stream its 300 ton chlorine unit at Wyandotte, Michigan.

As a result of a recent broad expansion, the firm has increased its output of soda ash by 20 per cent and chlorine by 75 per cent.

Adhesive, textile chemicals plant scheduled for eastern site

A new plant for manufacture of industrial adhesives and textile chemicals and finishes will be opened early this year near Stamford, Conn., by Polymer Industries of Astoria, L. I. The new plant will enable the company to boost its present production by 50 per cent. In addition to its new facilities, the company will continue production from its Greenville, S.C. plant.



Microscopic "Snowflakes" of silica . . .

Celite's diatomite structure steps up performance in paints—plastics—polishes . . . hundreds of other products

MICROSCOPIC PARTICLES of Celite* do a man-size job of stepping up performance for many of America's leading products. Here is how the unique structure of Celite Diatomite Powders may add more beauty, longer life, greater efficiency to *your* products, too.

For example, the spiny, irregularly shaped particles contribute surface characteristics which make them the outstanding flattening agent in paints. Again, because of their structure, Celite particles are widely used as a

mild, non-scratching abrasive in finest quality auto, silver and glass polishes. Or consider molded plastics, where the strength and durability of Celite particles add life and beauty to surface finish.

Moreover, Celite particles in mass have great bulk per unit weight, so they are invaluable for extending, dispersing or fluffing up dry powders. They have high absorptive capacity, too, so they keep powders free-flowing, they serve as a medium for shipping

or storing liquids in a dry form.

Which of the many Celite advantages can you use to build product performance or cut production costs? A Johns-Manville Celite Engineer will gladly discuss your problem; without obligation. For his services or more information, simply write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

*Celite is Johns-Manville's registered Trade Mark for the diatomaceous silica products.



Johns-Manville CELITE INDUSTRY'S MOST VERSATILE MINERAL FILLER

When inquiring check CP 6446 on handy form, pgs. 2-3

Investigate
this new
combination



BLACK DIAMOND Valve Bag Packer

AND BAG SETTLER

ACCURATE
FAST
SIMPLE
CLEAN
MODERATELY
PRICED
PERFORMANCE
GUARANTEED

BLACK PRODUCTS COMPANY

13513 S. Calumet Ave., Chicago 27, Ill., Dept. P31

MANUFACTURERS SINCE 1912

For further information, write

When inquiring check CP 6447 on handy form, pgs. 2-3



RICHMOND super-sifter

**"... doing a better job ..."
in a Wood Flour Mill**

Mr. James B. Stamps, Vice-President, Allen-Rogers Corporation (turned wood products) recently wrote:

"Our new flour mill has been in operation for something over a year now, and we have had an opportunity to observe closely the results which we are obtaining from the sifter, magnets, and stream splitter which we purchased from your company.

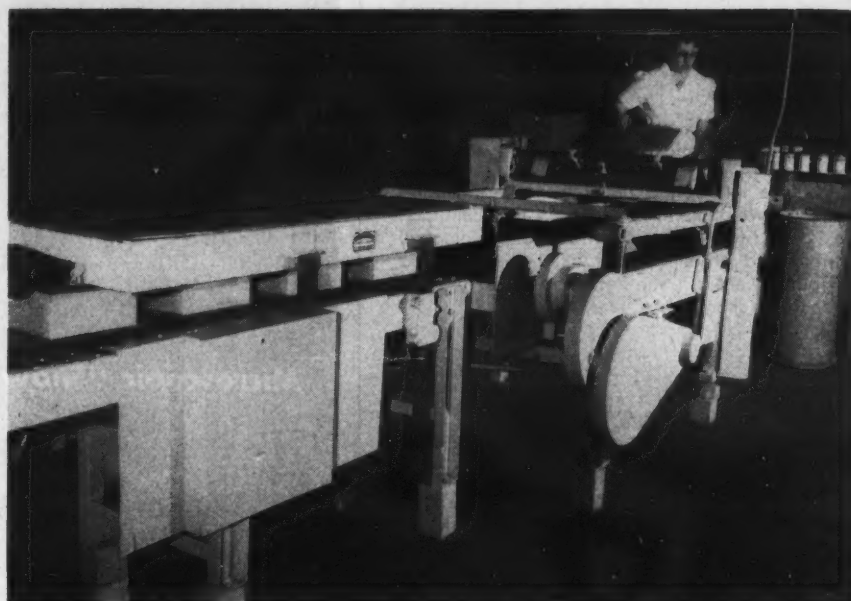
"We are very happy to tell you that in all cases these are performing satisfactorily and are indeed doing a better job than any other similar devices which we have used in the past."

Perhaps your plant can profit from the use of RICHMOND SIFTERS, too.

RICHMOND MANUFACTURING COMPANY
AFFILIATED WITH NOVADOL AGENE CORP.
LOCKPORT, NEW YORK

When inquiring check CP 6448 on handy form, pgs. 2-3

packaging



Case sealing machine in operation at the G. D. Searle Co.

labor costs reduced with case sealer

G. D. Searle Co. decreases operators needed from two to one, improves employee morale, while producing a neater, cleaner carton

Problem: At the G. D. Searle Co. in Skokie, Ill. an ethical bulk laxative product, known as Metamucil, is made from refined psyllium seed. Material is packaged as follows:

- 12 16-oz cans in case 12 $\frac{3}{8}$ x 9 $\frac{5}{8}$ x 6 $\frac{7}{8}$ "
- 12 8-oz cans in case 10 $\frac{1}{2}$ x 8 x 5"
- 12 4-oz cans in case 9 $\frac{1}{4}$ x 7 $\frac{1}{8}$ x 4 $\frac{1}{2}$ "

Formerly, the cans were manually placed in the cases and hand-taped top and bottom. Since this method was laborious and costly, improved packaging procedure was necessary.

Solution: Approximately three years

ago, the Model "G" Case Sealing Machine shown in accompanying illustration was acquired and placed in operation.

After the required number of cans are placed in the case, it is moved slightly forward into the machine with the rear top inner flap held down until brought under control of the top spine. Glue is automatically applied to the flaps, which are then firmly closed, as case passes through machine. Unit is rapidly adjustable for the three case sizes used in operation. It also can be adjusted for all case sizes ranging from 8 to 22" long, 7 to 16" wide, and 4 to 18" high. Operating speed is four cases per minute.

At the discharge end of the machine, a top dating device imprints the top panel of the corrugated shipping case. This is a random repeat dater which imprints code designation on top of case as it is discharged.

Discharge end of machine is raised to a

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sufficient height to permit gravity conveying of sealed cartons. Packing table, which can be adjusted to most comfortable height for individual operator, is used with unit.

Results: Use of the case sealing machine has reduced the number of operators required from two to one. Also, material costs have been decreased by the use of glue instead of tape. In addition to the cost reducing features, the machine produces a neater, cleaner carton, contributing in this way to the extreme cleanliness necessary in the production of high quality ethical drugs. Since less effort is required in the packaging operation, employe morale has been improved.

According to the supervisor, William H. Grigg, who is responsible for the successful adaption and operation of the machine, maintenance has been practically nil. This is partly due to the company policy of preventive maintenance and careful attention to lubrication. No problem is presented in starting up the machine. About all that is required is to see that glue is in the glue pot. Only few minutes are required for changing from one size of carton to another.

(Model "G" Case Sealing Machine is manufactured by J. L. Ferguson Co., Dept. CP, Joliet, Ill. . . . or for more information concerning manufacturer's product, reader may simply check CP 6449 on the convenient Reader Service slip located between pages two and three.)

Color-coding of many materials made possible with line of Indelible Inks

Uses: For color-coding in manufacture; for identification of fabrics; for marking paper, metal, fiber, and plastic tags; and for any industrial purpose where colors must survive water, steam, solvents, bleaches, alkalis, and digesters.

Features: Tests extending over three years have been made in laboratory and field. According to manufacturer, there has been no report of failure in permanence or color fastness. Tests covered such essentials as penetration, controlled migration, color strength, formula stability, drying properties, and resistance to soaps and detergents, enzymes, high temperature baths, and petroleum and hydrocarbon solvents.

Description: Inks are available in 12 standard colors: emerald green, royal blue, light blue, blue green, violet, red violet, black, gray, chrome yellow, orange, red, and brown. Others may be had on special order. Inks are packaged in pint, quart, and gallon containers.

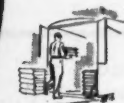
(Indelible colored inks are a product of Driflo Mfg. Co., Dept. CP, 642 E. Ten-Mile Rd., Hazel Park, Mich. . . . or for more information regarding this product, reader may simply check CP 6450 on convenient Reader Service slip located between pages 2 and 3.)



Prove it
with **CHASE**
MULTIWALL
Paper Bags



Prove it to Your
Distributors and Dealers...



Prove it to Your Consumers



Prove it to Your Balance Sheet

Are you proud of the high quality of your products?

You can give *visible* evidence of superiority by packaging in CHASE Multiwall bags. This *preferred* bag is backed by 107 years of CHASE experience . . . experience in developing the finest material and workmanship . . . experience in fine printing . . . experience in Multiwall bag manufacture that assures CHASE customers of **QUALITY** bags on every order.

IT'S THE PACKAGE THAT GIVES YOU THESE EXTRAS...

1. Better appearance.
2. Clean, colorful brand printing.
3. More sales appeal.
4. Better protection for your product.
5. A bag designed for your specific problem.
6. Better acceptance of your brand.



CHASE BAG COMPANY 309 WEST JACKSON BOULEVARD • CHICAGO, ILLINOIS

When inquiring check CP 6451 on handy form, pgs. 2-3

Typical Wet and Dry Filtrations prove

Dynel Fabrics cost less to use...



WET FILTRATION — Dynel diaphragms in copper plating tank (shown in automotive plant) have use-life of 4-6 months, compared to 7-13 weeks of previous filter cloths.



DRY FILTRATION — Dynel-wool dust fume bags outlast all-wool bags 9 to 1 in anti-mony smelter. In addition, their original cost is less than that of other bags.

During a 60-day actual-use test, Dynel filter cloths required only about 1/8 as many replacements as comparable cotton filter cloths under similar conditions. This reduced cloth costs by 75.4%. Fabrics were tested on a 36-inch Shriver plate-and-frame press, used for filtering various ore slurries. Total usage was 93 cotton cloths, 11 Dynel. Of the 93 cottons, most rotted because of acid disintegration. No such failures resulted during use of Dynel. Also, Dynel cloths did not become stiff with use, nor did the filter cakes adhere as tightly to them as to the cotton cloths.

... Only Dynel Filter Fabrics give you all these advantages:

- Unaffected by most chemicals
- Won't shrink or stretch
- High strength—wet or dry
- Mildewproof—fungus-proof

Investigate Dynel today! For a list of manufacturers so you can test Dynel filter cloth under the specific conditions in your plant, please write us on your company letterhead. Address:

Textile Fibers Dept. P-1, Carbide and Carbon Chemicals Company
A Division of Union Carbide and Carbon Corp., 30 E. 42nd Street, New York 17, N. Y.

Performance will tell...it's DYNEL!

When inquiring check CP 6452 on handy form, pgs. 2-3

PACKAGING

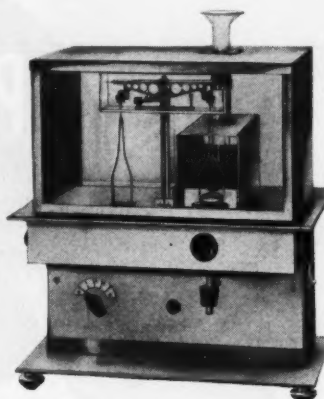
Quantities to 1000 mg dispensed by aseptic powder filler...

unit measures and fills with accuracy of $\pm 1\%$

Uses: For filling of powders, granular, and crystalline materials. Unit automatically dispenses materials in quantities from 10 to 1000 mg.

Features: Filling machine dispenses materials to a tolerance of $\pm 1\%$.

Description: Unit, Model PB, operates by means of a precision balance which automatically weighs and dispenses any preset quantity of material. Speed of unit is variable from 500 to 1000 fills per hour. Machine contains no motor or rotating parts. All



Apparatus measures 22" high, 20" long, 13 1/2" wide

parts which come in contact with filling medium may be removed for steam sterilizing. Unit is simple to operate and is designed for use by inexperienced personnel. Two types are offered — Model PB-1 covers range from 10 to 50 mg; Model PB-2 covers range from 50 to 1000 mg.

Entire apparatus is small enough to be placed under a hood in sterile room. Machine measures 22" high, 20" long, and 13 1/2" wide. Net weight is 80 lb.

(Powder filling machine is a product of National Instrument Co., Dept. CP, 5005 Queensbury Ave., Baltimore 15, Md. ... or for more information check CP 6453 on convenient Reader Service slip located between pages two and three.)



It's good business to watch weights closely! Check at receiving, shipping, production stages without delaying handling.

Put a stop to paying for dunnage, inaccuracies, other's miscalculations that rob you of your profit. Weigh loads as you lift them to move them by crane or hoist. Speed inventories, eliminate labor and equipment tie-ups at the weighing station.

Thousands of HYDROSCALES are at work in large and small plants all over the country.

The cost of weighing has been reduced to a minimum by—
HYDROSCALE

HYDRAULIC CRANE SCALE

36 models
500-200,000 lbs.

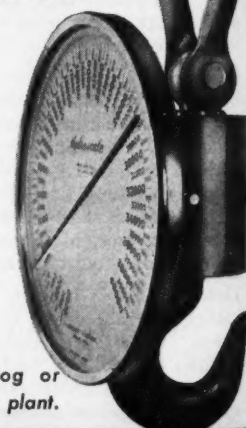
12", 24", 30" dials

Tilt face models for high level reading

Combined reading kilogram-pound dials

Batching models indicate pour-off

Write for our catalog or demonstration in your plant.



HYDROWAY SCALES, INC.

20624 WEST 8 MILE ROAD P. O. Box 4754 DETROIT 19, MICH.

When inquiring check CP 6454 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Horn sounds when package is heavy or light . . .

automatic checkweighing scale is installed in line between filling and closing operations

Uses: Checkweighing filled bags or cartons between filling and closing operations.

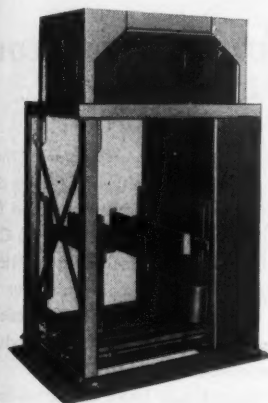
Features: Conveyor of unit can be mounted as close as 8" to the floor. Floor space required for complete unit is only 28 by 36". Material from broken containers passing over scale conveyor will fall through to the floor and will not alter tare weight of scale.

Description: Unit includes a totally enclosed electro-mechanical weighing mechanism, two weight-indicating dials, motor-driven slat type conveyor, automatic horn, and controls. Conveyor hangs from scale platform with sufficient clearance to allow packages to pass under the scale housing.

Conveyor of scale is placed in line carrying packages to be checkweighed, and runs continuously until package is fully on the scale, at which time a photo-electric circuit interruption stops the conveyor. Package is then checkweighed by the electro-mechanical operation of the scale — without knife-edge pivots.

If filling is proper, conveyor automatically starts again and discharges package. If package is off-weight, a horn automatically sounds and 1) package is held on scale until removed manually, or 2) package is discharged as usual.

(Model 100S checkweight scale is built by Thayer Scale and Engineering Corporation, Dept. CP, East Water St., Rockland, Mass. . . or for more information check CP 6455 on handy form, pages 2 and 3.)



Automatic checkweighing scale

Shows simple way of solving industrial marking problems

Illustrated 4-page bulletin describes self-sticking special markers and labels. Actual-size illustrations of pressure-sensitive markers are shown in three colors. Included are trade marks, instruction, inspection, part numbers, Underwriters' and serially numbered labels.

Bul 132 is issued by Dept. 97, W. H. Brady Co., Dept. CP, 727 W. Glendale Ave., Milwaukee 12, Wis. When inquiring specify CP 6456 on handy form, pages 2 and 3.



AN "F"

is the shortest distance to her hand!

A Continental "F" style can is the shortest distance to the shopper's hand. In the store it says, "Buy me!" In the home it says, "Use me!"

Put these beautifully lithographed containers to work for you. Our Tailor-Made Package Service

brings on-the-nose deliveries when and where you say. It means intelligent discussion of your individual problems, and as much or as little of our research and engineering as you require to lick them. Why not call Continental today.

CONTINENTAL CAN COMPANY

CONTINENTAL CAN BUILDING •
100 EAST 42ND STREET • NEW YORK 17, N. Y.



Eastern Div.: 100 E. 42nd St., New York 17 • Central Div.: 135 So. La Salle St., Chicago 3
Pacific Div.: Russ Building, San Francisco 4



When inquiring check CP 6457 on handy form, pgs. 2-3



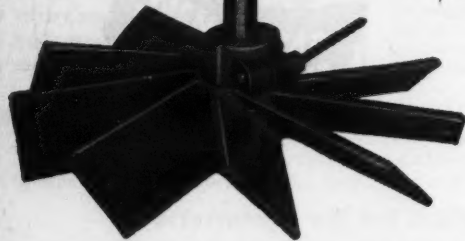
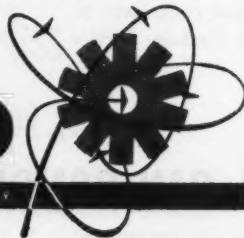
Best in the long run

Agitation is like other process operations. Initial cost of agitating equipment is usually small when compared with the power and the time consumed by the actual processing operation itself. That's why it pays to get the best in agitating equipment.

Each Nettco Agitator is an engineered combination of standardized components — motors, drives, shafts, stirrers. Each Nettco Agitator gives you the most for your money in the long run... by saving power, time, and upkeep. For full details, data, and recommendations, write New England Tank & Tower Company, 93 Tileston Street, Everett 49, Mass.

NETTCO

Foremost in ENGINEERED AGITATION for over half a century.



When inquiring check CP 6458 on handy form, pgs. 2-3

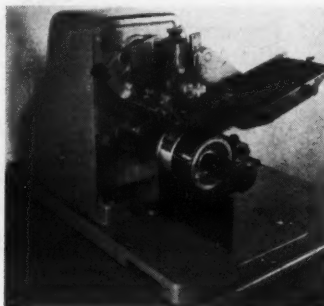
PACKAGING

Marks cylindrical objects at speeds to 7000/hr, is bench mounted...

Uses: To imprint variable detail, trademark, contents, etc., on many types of cylindrical objects.

Features: Size of objects to be marked can vary from 1/8 to 2 1/4" diameter — with a maximum imprinting area of 2 7/8 x 6". Special fixtures are available for larger diameters and lengths of print. Chute feed and automatic ejection are said to allow production speeds from 3000 to 7000/hr.

Description: Bench-mounted unit, Model 20A, may be quickly switched from imprinting one size object to another — or from one type of imprint to another. Individual lot or control numbers may be inserted without changing printing plate on machine.



Size of unit is 20 x 24 x 28"

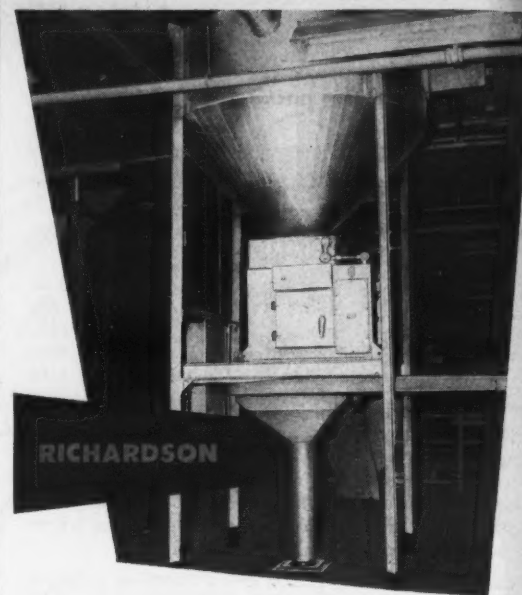
Inks are formulated for best printing results on plastic, metal, ceramic, wood, or fiberboard. Special inks are available for permanent marking on glass.

(Marking machine is a product of Markem Machine Co., Dept. CP, Keene, N. H. . . or for more information check CP 6459 on handy form, pages 2 and 3.)

Bul shows types of liquid fillers

Illustrated 12-page bulletin shows manufacturer's complete line of liquid filling machines.

Bul "Liquid Filling" is issued by Packer Machinery Corp., Dept. CP, 30 Irving Place, New York 3, N. Y. When inquiring specify CP 6460 on handy form, pages 2 and 3.



PROVIDES SPEED and AUTOMATIC QUALITY CONTROL... for the MURRAY COMPANY (Division of H. A. Johnson Co.)

Rising labor costs can be offset while still maintaining both quality and quantity production. Proof of this is the Richardson installation pictured, recently completed for the Murray Company, Division of the H. A. Johnson Co., Boston, Mass. Adopting the recommendations of a Richardson field engineer, this well known manufacturer of soda fountain syrups and toppings has actually increased output at reduced unit cost. At the same time product quality is now rigidly controlled, automatically.

Materials handling by weight has been a Richardson specialty for more than fifty years. And every year has seen more practical applications throughout the processing industries of this wide range of experience.

PROBLEM: High labor charges and uncertain accuracies in loading sugar to syrup kettles presented a challenge to the cost- and quality-conscious management of the H. A. Johnson Co.

SOLUTION: A suitable conveyor system feeding a Richardson Automatic Scale provided high volume, controlled accurate flow of sugar to the cookers. Another alert management had reduced their labor charge to practically nil and incorporated machine-made, repetitive accuracy into their process.

At no obligation to you, a Richardson engineer will gladly call, survey your present methods, and show you the Richardson way to lower costs through efficient materials handling by weight.

Richardson Scale Co., Clifton, New Jersey. Feeder-Weigher Systems of All Types: Automatic Bulk-Weighing Hopper Scales, Including Conveyor-Feed Types • Continuous Feeder-Weighers • Automatic Bagging Scales • Bag Sewing Conveyors • Packers • Process Control Panels. Branch offices in: Atlanta • Buffalo • Boston • Chicago • Detroit • Houston • Minneapolis • New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal • Toronto.

Richardson



MATERIALS HANDLING BY WEIGHT SINCE 1902

When inquiring check CP 6461 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Accuracy stressed by machine
in net weighing of many
free-flowing materials**

Uses: For fully automatic net weighing of a variety of free-flowing materials.

Features: Net weighing machine incorporates the even balance, precision type industrial lever system, which is capable of 1/32 oz sensitivity and equipped with magnified 16:1 ratio visual indicator which makes fractional ounce variations easy to read.

Visual indicator provides constant, reliable reference for rapid adjustment of scale when initially setting up for production or a new weight.



Visual indicator provides constant reference

Description: Scale is equipped with a 3-compartment rotating weigh hopper which allows rapid operation with no sacrifice of accuracy. Model shown can be operated automatically for continuous weighings or may be controlled manually by push-button switch.

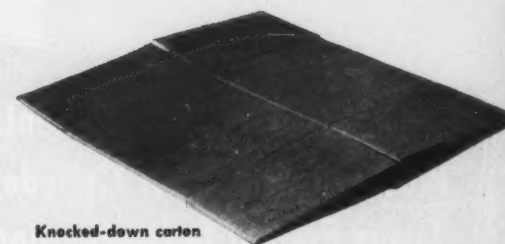
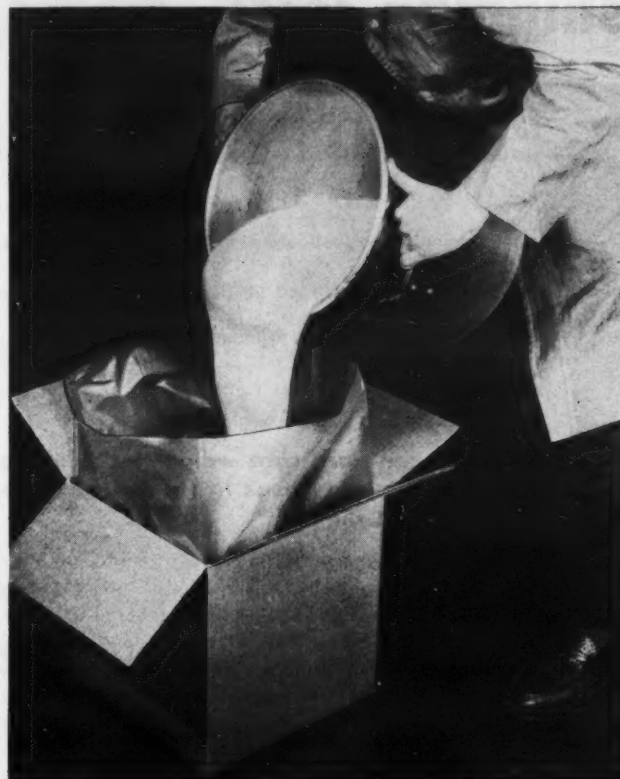
Net weighing machine is comprised of scale of suitable capacity, speed, and sensitivity to handle product. It is equipped with double photoelectric cell controls and electrical amplifier unit. Scale also has a vibratory-type feeder machine complete with feeder conveyor with two rates of feed controller, hopper, hopper vibrator with controller with supporting frame.

Number of weighments per min possible with any net weighing machine is determined by feeding characteristics of product. With very free-flowing materials, for 1/2 to 1 lb quantities, 25 weighments per min are possible with this unit. Entire machine may be mounted on casters to make it mobile for operations where user desires to move it from one supply hopper to another.

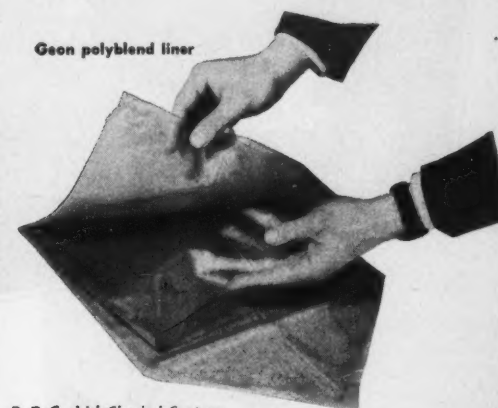
(Net weighing machine is a product of The Exact Weight Scale Co., Dept. CP, 944 Fifth Ave. (West), Columbus 8, Ohio . . . or for more information check CP 6462, pages 2 and 3.)

Another new development using

B. F. Goodrich Chemical raw materials



Knocked-down carton



Geon polyblend liner

B. F. Goodrich Chemical Company does not make this liner. We supply the Geon polyblend only.

THE CARTON THAT ACTS LIKE A DRUM!

Geon vinyl plastic liner cuts cost of packaging lard, oils, pharmaceuticals

HERE'S a new combination that cuts packaging costs, eliminates waste and saves storage space—a paper board carton with a removable liner made of Geon polyblend.

The Geon liner makes it possible to use cartons instead of expensive metal containers for packaging many products. Because of Geon, the liner resists oils, greases and many chemicals. Easily sealed, it does not permit the contents to seep or migrate through the liner—does not contaminate the contents or the carton. It is abrasion-resistant, odor-proof and flexible at high or low temperatures.

And look at this extra saving! The knocked-down cartons and the liners are stored flat until needed—a big reduction in storage space. The liners are easily inserted—can be made to fit practically any shape container.

Helping find ways for Geon materials to develop or improve more saleable products are jobs that we do regularly. Versatile Geon comes in readily adaptable forms—as resins, plastic granules and liquid latex. These forms may be processed by calendering, extruding, coating or molding . . . can be compounded in a wide range of attractive colors. We'll help

you select the form best suited to your needs. For technical information, please write Dept. GF-1, B.F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitcheners, Ontario, Cable address: Goodchemco.



GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable
GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

When inquiring check CP 6463 on handy form, pgs. 2-3

Here's What you **CAN** do about high shipping costs...

Net Weight of Contents
Plus Tare Weight of Cylinder
Times Freight to Destination



CONTAINERS FOR GASES, LIQUIDS, AND SOLIDS

You can pare tare weight by shipping compressed gases in Hackney Light-weight Cylinders.

These seamless cylinders weigh less because they are made of selected, high-quality steel that assures light weight and adequate strength. Also, the Hackney process of cold drawing produces uniform sidewall thicknesses that eliminate excess material.

Remember, the low tare weight of Hackney Cylinders saves shipping dollars for you not only on out-bound shipments—but also on the return of empties. Hackney Cylinders are uniform in size and weight—uniformly easy to handle—uniformly durable for trip after trip. Made in many sizes—for high-pressure or low-pressure shipment of all types of gases. Send for further information.

Pressed Steel Tank Company

Manufacturer of Hackney Products

1463 S. 66th St., Milwaukee 14 • 52 Vanderbilt Avenue, Room 2087, New York 17 • 235 Hanna Bldg., Cleveland 15 • 936 W. Peachtree St., N.W., Room 126, Atlanta 3 • 208 S. LaSalle St., Room 796, Chicago 4 • 368 Roosevelt Bldg., Los Angeles 17 • 18 W. 43rd St., Room 19, Kansas City 11, Mo. • Dept. CPP — Downingtown, Pa.

When inquiring check CP 6464 on handy form, pgs. 2-3

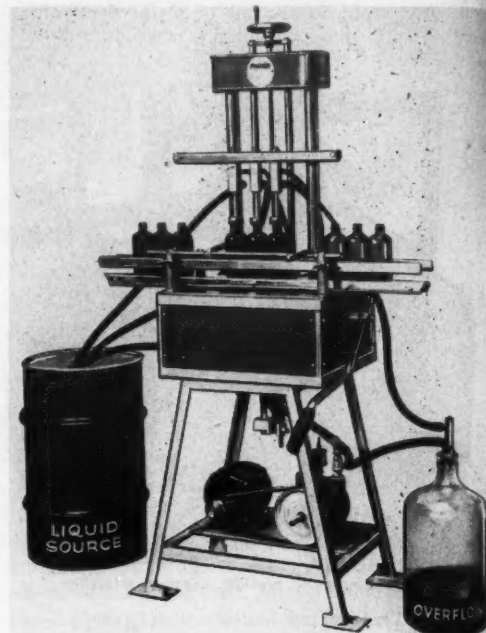
PACKAGING

Speeds to 40 containers per min attained by small, compact filling machine . . .

unit eliminates need for overhead tanks, fills directly from liquid source on floor

Uses: For filling bottles and cans from fractional ounces to quarts with practically any still liquid.

Features: Unit is designed for packer who requires small, compact filler. It will handle containers at speeds up to 40 per min. Construction



Unit is designed to carry up to six spouts

eliminates need for overhead tanks. Unit fills directly from drum, demijohn, or other type container resting on floor.

Description: Model A straightline filler is available in three spout assemblies; however, unit is designed to carry up to six spouts, enabling increased production. Containers are accurately filled to a pre-determined level — attachment handles overflow.

Installation, maintenance, and change-over is said to be simple. Dimensions of unit are: width, 36"; depth (front to back), 20"; height, 64".

(Filling machine is a product of Packer Machinery Corp., Dept. CP, 30 Irving Place, New York 3, N. Y. . . . or for more information check CP 6465 on handy form, pages 2 and 3.)

For more information on product advertised at right, specify CP 6466 . . . see information request blank between pages 2 and 3.

CHEMICAL PROCESSING

Read What **RHEEM** Does

to Help Solve Your Shipping Problems!

Rheem sets the standard for the entire steel container industry

by taking care in preparing its steel for

fabrication. Rheem provides clean, long-lasting drums.

Every minute particle of oxide "scale" is removed by Rheem shot-blasting, stopping rust and corrosion for years of dependable service.



Clean! After steel sheet is rinsed, even a white handkerchief can't find a trace of soil or contamination.

ATTENTION SHIPPERS!

Rheem has a complete line of special drum linings for a variety of products. But if your product requires a unique lining, Rheem will develop it for you. Each of Rheem's seven strategically-located container plants has complete laboratory facilities. Expert chemical engineers who have solved container problems for many of America's largest shippers will help you. Call or wire the office nearest you!



RHEEM DRUMS ARE CLEANER!

Shot-blasting process removes troublesome oxide "scale" from both sides of each steel sheet and leaves a clean, oxide-free surface. Then each sheet is rolled and leveled to insure a smooth, even surface necessary for precision roller-coating. Next, detergents, scalding water and revolving brushes scrub it clean. After rinsing and drying, the sheet is ready for further treatment.

RHEEM DRUMS LAST LONGER!

Once clean, each sheet is treated on both sides with a patented phosphoric compound to inhibit rusting. This is one more important step in Rheem's careful preparation of its steel to insure uniform adherence of the drum lining. This also makes it possible for Rheem Drums to withstand long periods of weathering. Finally, when required, special coatings are roller-applied and baked on to produce a tough, durable finish that protects your product from contamination.

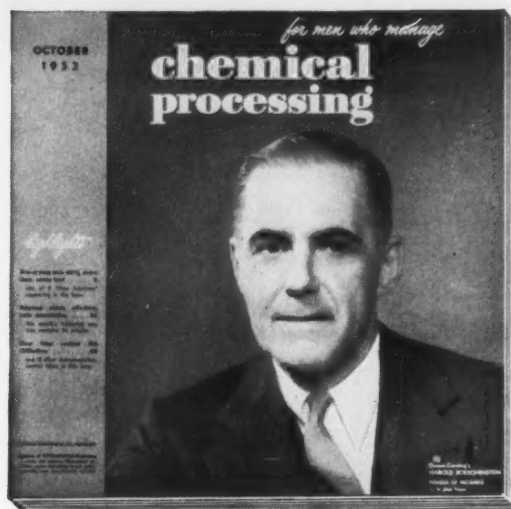


Free Folder! Write today to the nearest Rheem Manufacturing Office listed below for your free copy of informative folder on Rheem Drums.

Rheem Manufacturing Company

**World's Largest Manufacturer
of Steel Shipping Containers**

RICHMOND, CALIFORNIA • SOUTH GATE, CALIFORNIA • HOUSTON, TEXAS • CHICAGO, ILLINOIS
NEW YORK, NEW YORK • NEW ORLEANS, LOUISIANA • LINDEN, NEW JERSEY • SPARROWS POINT, MARYLAND



Have you wondered
← why this magazine
comes to you

...without charge?

MAYBE, LIKE MANY others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

. . . no, 'tisn't so. With the exception of a few general magazines (e.g. *READER'S DIGEST*) that sell hundreds of thousands — some millions of copies — most industrial publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. *Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.*

Advertisers demand best coverage

Since advertisers pay the bills, they demand best possible coverage of all important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

You can't do that by selling subscriptions — sales costs are high — a large share of the subscribers cancel each year — and no matter how much time, money, and pressure is used

there are always some of the important men who will never buy.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to hand-pick the most important men; (b) send the magazine to **ALL** these men; and (c) to make the magazine so interesting, so valuable that they will want to read it.

That's why . . .

. . . *Chemical Processing* is sent only to qualified readers . . . selected management and technical key-men in the chemical industry; that's why you get *Chemical Processing* free — that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the chemical processing field.

Chemical Processing

Published by Putman Publishing Company

Creators of PUTMAN-STYLE Magazines

. . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more **READER ACTION**



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PACKAGING

Higher contact ratings, better circuit design featured on 2 relays

Uses: For applications of counting, sorting, indicating, and controlling on packaging lines.

Features: Two models of photoelectric relays have been announced: one rate at 450 operations/min; the other, a high-sensitivity, high-speed model rated at 600 operations/min.

Description: Smaller of the two relays (CR7505-K201-K202) has 10 v-amp maximum power requirement, operating on 115/230 v, 50/60 c. At 450 operations/min, time required to operate relay is 1/15 sec. Reset time is also 1/15 sec. Two SPDT contacts make it possible to control two independent loads. Relay operating distance with two ft candles at window varies from 20 to 70 ft without filter and 12 to 42 ft with infrared filter.

To change operating light level, a screw driver adjustment can be made by removing a plug on front cover. This unit has a self-contained phototube which can be disconnected if necessary, and a separate phototube holder connected by means of screw-type terminals.

Power requirements for high-sensitivity, high-speed relay (CR7505-N210-N211) are 115/230 v, 50/60 c, with a 45 v-amp maximum. Six hundred operations/min are made possible by the 0.015 sec operating time and reset time of unit.

Responding to light changes as small as 1/2 ft candle and pulses as short as 0.001 sec duration, relay is easily adjusted by means of two dials, one for sensitivity, the other for time delay duration. Terminals are opened and numbered for easy wiring, and all components are accessible.

(Photoelectric relays are a product of General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. . . . or for more information check CP 6467, pages 2 and 3.)

For more information on product at right, specify CP 6468 . . . see information request blank between pages 2 - 3.



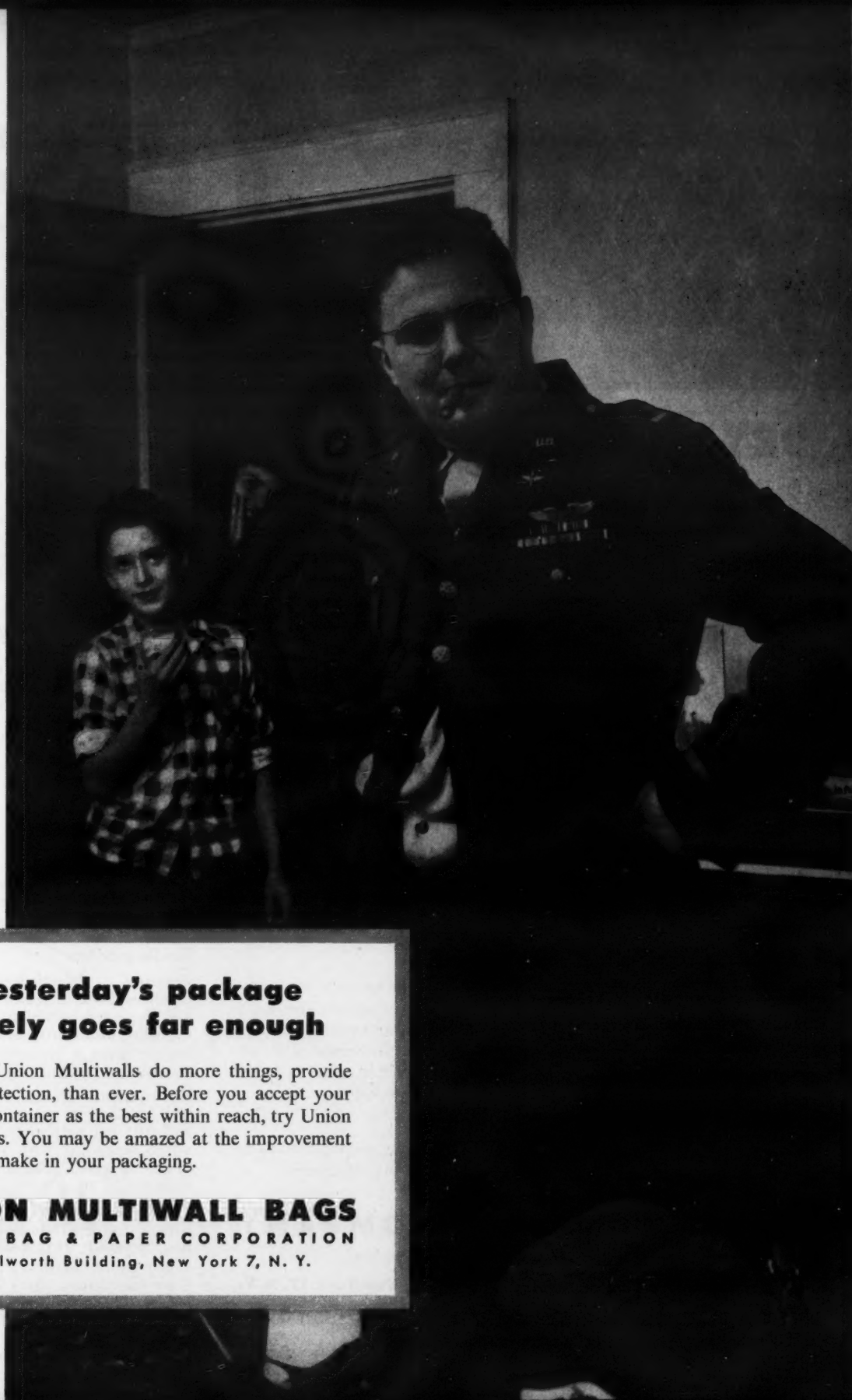
Yesterday's package rarely goes far enough

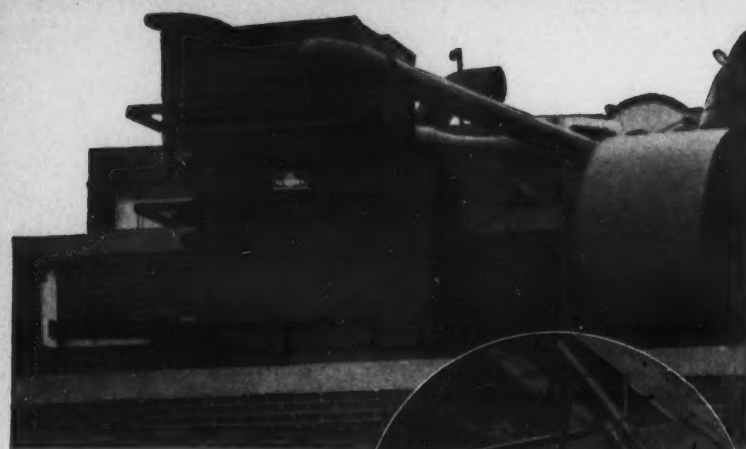
Today's Union Multiwalls do more things, provide more protection, than ever. Before you accept your present container as the best within reach, try Union Multiwalls. You may be amazed at the improvement they can make in your packaging.

UNION MULTIWALL BAGS

UNION BAG & PAPER CORPORATION

Woolworth Building, New York 7, N. Y.





DRY, FRESH AIR For a Supersonic WIND TUNNEL

● New and improved, this NIAGARA METHOD that effectively dries outdoor air for a wind tunnel used for testing at supersonic speed, can be trusted to give you the best air conditions for your purpose:

- to dry your materials or products
- to prevent condensation or moisture damage
- to protect your moisture-sensitive processes
- to give you an atmosphere in which your product can be packaged or stored safely.
- to give you exactly the right atmospheric conditions for testing materials
- to put "fresh air" back into your air conditioning, increasing its capacity and effectiveness

The Niagara "fresh air" Method removes the excess moisture from outdoor air by contact with an absorbent liquid in a spray chamber. The liquid contact temperature and the absorbent concentration, both controlled thermostatically, determine the amount of moisture in the conditioned air. Heating or cooling the air is a separate function. Therefore, you can easily and inexpensively have a precisely controlled condition without the use of moisture sensitive instruments.

The Niagara Absorbent Spray Method is noted for solving the really difficult problems of air conditioning. Write for complete information.

NIAGARA BLOWER COMPANY

Over 35 Years' Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

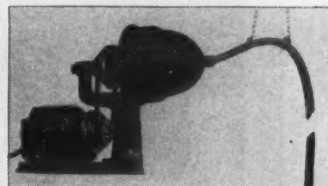
New York 17, N. Y.

Field Engineers in Principal Cities of U. S. and Canada

When inquiring check CP 6469 on handy form, pgs. 2-3

PACKAGING

Positive seal given
10-120 mm sizes
by small capper



Capper uses 1/4 hp motor

Fast, positive seal for metal and screw caps is claimed for capper which will handle sizes from 10 mm to 120 mm. No experience is necessary to operate, as each cap is given a uniform degree of tightness which can be predetermined by the size and weight of the chuck, according to manufacturer.

(Eyrle Capper is product of Eyrle Co., Dept. CP, 1539 Folsom St., San Francisco, Calif. . . for more information check CP 6470 on the convenient Reader Service slip located between pages two and three.)

Two plastic barriers make strong liner for drums

Uses: Liner for use with fiber or steel drums in packaging liquid or solid materials such as acids, alkalis, foods, or other hard-to-handle products.

Features: Polyethylene liner is double-wall for increased strength and decreased possibility of tearing when load shifts. An insulating air space is between the two polyethylene walls.

Description: The See-Safe Multi-wall Airliner is made in 0.015 and 0.02 mil polyethylene (overall thickness of 0.03 and 0.04 mil). It is available in flat bottoms for 15, 30, and 55 gal drums.

(Product of Mehl Mfg. Co., Division of Sydney-Thomas Corporation, Dept. CP, 2057 Reading Rd., Cincinnati 2, Ohio . . . or for more information check CP 6471 on the convenient Reader Service slip located between pages two and three.)

CUT COSTS

Pack Chemicals in VALVE BAGS with AUGER-MATIC

Fills and Weighs... All in One Operation



NO DUST



NO WEIGHING



NO SEWING . . .
NO TIEING

Cut production costs by packing your product in modern self-closing bags... the AUGER-MATIC Bag Packer fills them quickly to any weight desired... shuts off automatically.

Valve Bags fit snugly on AUGER-MATIC spout so no dust escapes . . . keeps bags clean . . . eliminates costly tying or bag closing equipment.

AUGER-MATIC Bag Packer is equipped with multi-twist auger . . . packs any materials from powder to pellets. Easily moved from one filling point to another.

Send for descriptive literature

E. D. CODDINGTON MFG. CO.

5036 North 37th Street • Milwaukee 9, Wisconsin

When inquiring check CP 6472 on handy form, pgs. 2-3

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FEBRUAR

**Developing a package —
an outline of experience
in procedures . . .**

Over a period of 13 years, Eastman Kodak Co. of Rochester, N. Y., has evolved a program for developing a package. It is an overall program which gives consideration to tools, procedures, tests, specifications, cost factors, production considerations, product analysis, reference sources, etc. The five steps to developing a package are as follows:

Step 1 — Define the Problem

- A. Is the package to be developed for a new product?
- B. Is a revision to be made in the current package?

Step 2 — Break the Job Down

- A. Package development check list . . . a tool to insure consideration of all phases of problem and to record progress of assignment
- B. Merchandising check list . . . a tool for obtaining information on merchandising plans for product
- C. Package performance check list . . . a tool for determining types of protection required by product and necessary tests

Step 3 — Question Every Detail

- A. What functions must package perform?
- B. How does each component of complete package contribute?
- C. Consider material and package forms available
- D. Make use of reference sources

Step 4 — Develop the Best Package

- A. Sample preparation . . . engineer obtains alternative samples to illustrate several possibilities
- B. Production considerations . . . methods, equipment, plant layout, material handling
- C. Economic analysis work sheet . . . a tool for compiling estimated costs for labor, material, equipment, and burden
- D. Carrier regulations
- E. Package styling
- F. Samples for testing
- G. Package tests . . . include these types: market, production, keeping, contamination, trial shipment, simulated shipment
- H. Economic analysis summary . . . a tool for comparing economic analysis of alternative proposals
- I. Package specifications . . . types and purpose

Step 5 — Put the Package to Work

- A. Presentation . . . engineer "sells" best package to interested persons
- B. Authorization . . . package approval circulated through organization
- C. Follow-up . . . engineer checks with production on first run of authorized package

Results

- A. The package for a new product . . . a case history
- B. The revised package . . . a case history

(From a talk by Kenneth R. Marvin, Packaging Consultant, Industrial Engineering Div., Eastman Kodak Co.)

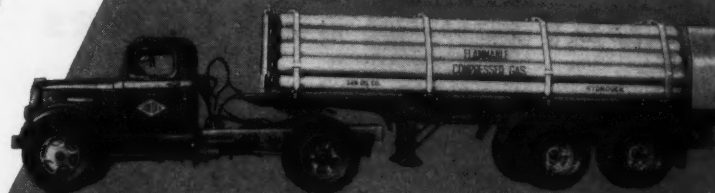
THESE 240 STANDARD GAS CYLINDERS EQUAL

ONE

TAYLOR-WHARTON

38 TUBE GAS

TRANSPORT



TAYLOR-WHARTON GAS TRANSPORTS mean safety, economy and convenience. Available in 30 and 38 tube, single or double axle construction, these units are now successfully carrying: Oxygen, Nitrogen, Helium, Boron Trifluoride, and Hydrogen. Your solution to problems of high pressure gas storage or bulk transportation.

WRITE FOR NEW DESCRIPTIVE BULLETIN TODAY.



TAYLOR-WHARTON IRON & STEEL CO.

CINCINNATI 12, OHIO

Also Manufacturers of: Manganese Steel Castings, Alloy and Carbon Steel Castings, Special Trackwork, Gas Cylinders

When inquiring check CP 6473 on handy form, pgs. 2-3

Photo shows two of the eight DAY Reverse Jet Dust Filters used by Chas. Pfizer & Co., Inc. These dust filters are located at the Groton, Connecticut plant where the company manufactures several antibiotics, Citric, Oxalate, Gluconic Acid and their derivatives, Caffeine, Vitamin A and Vitamins of the B Complex.



WHY CHEMICAL PLANTS USE DAY REVERSE JET DUST FILTERS

1. Reverse Jet Cleaning permits the use of more efficient filter media which gives filtering efficiencies up to 99.99+ %.
2. Constant air volumes maintained because of continuous cleaning action.
3. Continuous, automatic operation without the necessity of shutting down any section for cleaning.
4. Air-to-cloth ratios to as high as 20 to 1, depending on dust being handled.

If you want to recover product or dispose of dust our Bulletin Number 528 contains new information on dust control. Write ToDAY for this Bulletin.

The DAY Company

852 Third Ave. N.E., Minneapolis 13, Minn.

IN CANADA: P.O. Box 70Y, Ft. William, Ontario • Branch Plant: Buffalo, Fort Worth, Welland, Ontario



When inquiring check CP 6474 on handy form, pgs. 2-3

PACKAGING

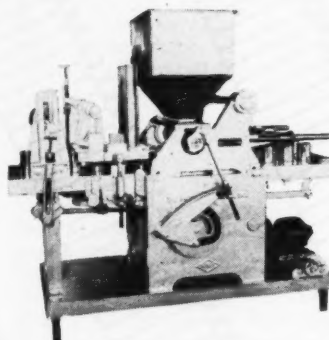
**Automatically fills cans,
presses lids into place
at rates to 50/min . . .**

combination unit handles paint
and other viscous products

Uses: For filling paint, oil, chemicals, and similar viscous products.

Features: Automatic two-line machine fills 1/2 pint, pint, quart, and gallon cans, then dispenses lids and presses them firmly into place on containers. Production on combination unit is from 20 to 50 cans/min. Containers move only a minimum amount as they do not have to be raised or lowered for filling, capping, and pressing operation.

Description: Only one operator is necessary and unit is said to save time and labor since cleaning and changeover from one size to another or from one product to another can be made in a few minutes.



Fills 1/2 pint to gal cans

All contact parts of unit are of bronze, but if corrosion resistance is required, stainless steel can be used. Casters can be added to machine to permit rolling to production lines.

Length of machine is 72 1/2", width 38 1/4", and height 66 1/2 to 72 1/2". Hopper capacity is 33 gallons.

(Combination filling machine is a product of The Filler Machine Company, Incorporated, Department CP, Philmont Club Station, Pennsylvania . . . or to obtain additional information concerning manufacturer's product reader may simply check CP 6475 on the convenient Reader Service slip which is located between pages two and three.)



Left—
Union Special
Style 20100 H
Bag Closing
Machine

*Here's how
to close
MULTIWALL
PAPER
BAGS*

FOR lower production costs
...stronger, neater closures
...ability to get out rush orders
in a hurry, you can't beat Union
Special Bag Closing Machines! Specially built to stand
up under heavy production schedules, these machines
provide the high output rates needed to meet modern
competitive conditions.

In the Union Special line, it's easy to find the right
unit to meet your particular requirements.
ASK FOR RECOMMENDATIONS.



SEND FOR THIS BULLETIN!

Get your copy of this 16 page illustrated bulletin containing helpful data and charts on the complete Union Special line of bag closing machines. **UNION SPECIAL MACHINE CO.,**
442 North Franklin Street, Chicago 10, Illinois

UNION SPECIAL

When inquiring check CP 6476 on handy form, pgs. 2-3



AVERY
Kum-Kleen self-adhesive
LABELS

**THE EASIEST AND
MOST ECONOMICAL
LABEL YOU CAN USE!**

- TRADEMARKS
- GUARANTEES
- NAMEPLATES
- DIAGRAMS
- APPROVAL SEALS
- INSTRUCTIONS
- "BUY" FEATURES
- WARNING
- INSPECTION
- PRICES

SAVE YOU TIME - MONEY!

An Avery label specialist will gladly explain how you can use Kum-Kleen pressure-sensitive labels profitably in YOUR business. Mail the coupon now for complete facts.



AVERY ADHESIVE LABEL CORP., DIV. 109

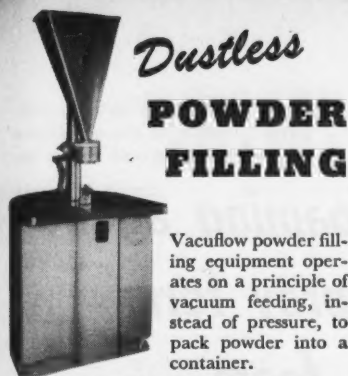
117 Liberty St., New York 6 • 1616 S. California Ave., Monrovia, Cal.
608 S. Dearborn St., Chicago 5 • Offices in other principal cities

- ☐ Please send case histories and samples
- ☐ Tell us about your electric label dispenser
- ☐ Have the local Avery man call

Name _____
Title _____
Company _____
Address _____

When inquiring check CP 6477 on handy form, pgs. 2-3

CHEMICAL PROCESSING



VACUFLOW



Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speeds of 45 to 300 per minute.

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning, powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

PNEUMATIC SCALE CORP., LTD.
67 Newport Ave., Quincy 71, Mass.
Also; New York; Chicago; San Francisco;
Los Angeles; Seattle; Leeds, England



When inquiring check CP 6478
on handy form, pgs. 2-3

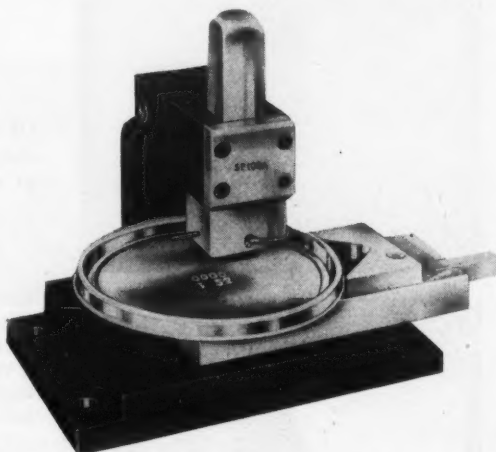
PACKAGING

**Size, content coding embossed
on can lids by hand fixture
needing male type only**

Uses: For embossing size and content coding on paint can lids, and for can lid applications of a similar type.

Features: Only male type or characters are needed with fixture. Special plastic matrix is provided to serve as female die. Matrix can be used over and over, and does not have to be changed as stamping characters are changed.

Description: Incorporated in hand fixture, designated SF-100-AE, are the following: stamping fixture frame; stamping fixture with movable type;



Type holder of unit (upper part) swivels back to provide easy changing of characters

plastic matrix; and a gage which centers marking, thereby making unit adaptable for embossing all sizes of can lids up to one gallon.

Type holder of unit is set on a swivel to provide an efficient method of changing type. Spring return is included which lifts holder and type off can lid as soon as lid is embossed. For most applications, 3/16" size characters are recommended. If desired, type holder can be made for one or more lines of lettering.

(Embossing fixture is a product of M. E. Cunningham Co., Dept. CP, 1025 Chateau St., Pittsburgh 33, Pa. . . or for more information check CP 6479 on handy form, pages 2 and 3.)

For gas law calculations on light hydrocarbons see Compressibility Factor
Nomograph on page 202

*These tough twins
protect your
hard-to-pack
products!*



Bemis Waterproof LAMINATED-TEXTILE Bags

These are the bags you need for the greatest protection at economical costs . . . *the strongest shipping bags made*. They are 3- or 5-layer construction, with crinkled paper or plastic linings laminated to cotton or burlap.

Bemis Flexibly Bags

If you require a little less than the super-protection of Bemis Waterproof Bags, these laminated, all-crinkled-paper bags are your best bet. Bemis Flexibly Bags are tough—all plies are crinkled to give stretch and flexibility.

Ask your Bemis Man to help you determine which is the practical, economical shipping bag for you. Remember—with either Bemis Waterproof or Bemis Flexibly, you get the benefits of Bemis crisp, bright multi-color printing . . . and Bemis multi-plant service.

Bemis

408 Pine St., Box 92
St. Louis 2, Mo.

When inquiring check CP 6480 on handy form, pgs. 2-3

another
BECKMAN
achievement!

...now

better moisture measurements
with the BECKMAN
AQUAMETER

Anybody who can read a burette and flip a switch can make fast, accurate moisture analyses with the BECKMAN AQUAMETER. The Aquameter uses the Karl Fischer method—most universally applicable for moisture determinations. And it does these Karl Fischer titrations AUTOMATICALLY, eliminating the problem of judging subtle end-point color changes which formerly required skilled technicians.

...other
advantages

Even inexperienced operators can achieve high precision.

Automatic feature allows operator to perform other duties between readings.

Completes any number of sequential titrations without resetting or checking.

Results are reproducible within a few tenths mg of water.

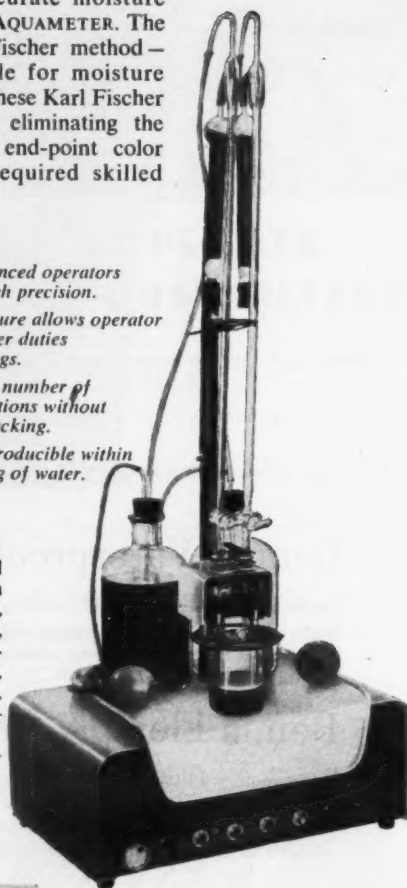
The Beckman Aquameter is ideal for routine moisture analyses on everything from food products, such as coffee, flour, grains, yeasts, syrups, and jellies to paper, petroleum products, pharmaceuticals, alcohols, soaps, oils, waxes, esters, solvents, paints, explosives, antibiotics.

For full details, See your Beckman Dealer or . . .

Write for
Data File 45-11

Beckman *division*

BECKMAN INSTRUMENTS, INC.
SOUTH PASADENA 1, CALIFORNIA

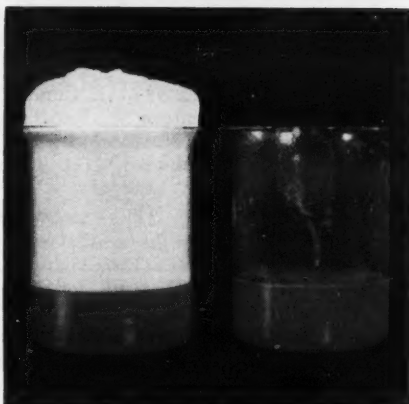
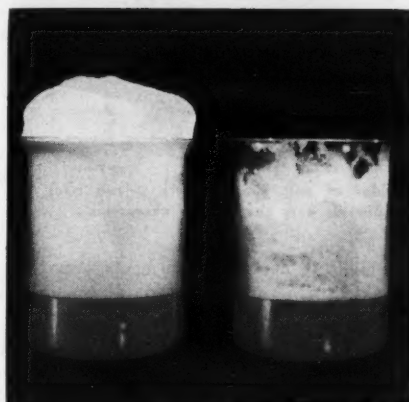


for the
laboratory

**Defoaming agent
in spray form
kills foam
at touch of valve**



Light weight aerosol-packaged
mist instantly controls foam
of small batches



Mist blankets foam, breaks it instantly

Laboratory, pilot plant, and other small scale processing now has an effective defoaming agent available at the touch of a valve. Preliminary measuring and mixing, over-application, and delays of inhibitor effectiveness are eliminated.

Aerosol-packaged silicone defoaming compound blankets foam instantly. Defoamer mixes rapidly and thoroughly.

Foam-breaking action is shown in the photographs. Two aqueous solutions of a common household detergent were whipped into a froth. (A drop of dye had also been added to show separation.) Contents of beaker at right were sprayed with agent. Before foam in other beaker began to collapse, inhibited foam was gone.

Silicone compound is Antifoam A. Although useful in very low concentrations on a wide range of materials, compound is limited by occasional difficulty in obtaining rapid and thorough dispersion in foaming medium. This limitation is overcome by the spray.

Effective foam-breaking concentration of silicone is from 0.01 to 1 ppm. This is much less than the 10 ppm concentration permitted in foods by the Pure Food and Drug Administration. Highly volatile Freon propellant vaporizes immediately upon discharge of the Antifoam A Spray.

(Spray is a product of Dow Corning Corp., Midland, Mich. . . . or for more information check CP 6482 on handy form, pages 2 and 3.)

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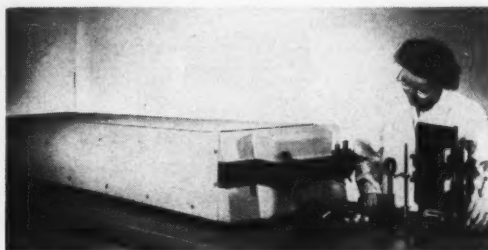
When inquiring check CP 6481 on handy form, pgs. 2-3

**Brings precision spectrography
within reach of laboratories
on small budgets**

Uses: Capable of analyzing a wide range of non-ferrous materials, and, in addition, suitable for use on the more complex spectra of unalloyed gray irons, plain carbon steels and low-grade ores.

Features: Tests have indicated that the unit produces a spectral line quality equal to that of far more elaborate equipment in analyses of brasses; aluminum, magnesium and bearing alloys; zinc-base castings; lubricating oils, ceramics; pigments; dyestuffs; biological materials; pharmaceuticals; and inorganic chemicals.

For ease in manipulation, all parts are located at the same end of the instrument.



Grating spectrograph features versatility, simplicity, compact size and ease of operation. Note that technician can manipulate the fixed-type slit, shutter and film holder from position at one end of unit

Description: The 1.5-meter stigmatic grating spectrograph weighs only 150 lb and measures 12 x 18 x 60". The unit can handle efficiently one-time analyses and eliminate the necessity for breaking down set-ups on larger instruments. The instrument is available in two models — Models 10 and 11 — which provide different dispersions, resolving powers and plate coverages.

The optical system (in both models) consists of a concave 40 x 80-mm precision grating, slit, quartz cylindrical lens, and film. Combination of cylindrical lens and concave grating provides a stigmatic spectrogram and permits the use of accessory equipment at the slit.

Slit is of the fixed type, ruled in silver on a slide, in widths of 10, 20 and 50 microns. Manual shutter is used and the film holder takes a 10" length of 35-mm film.

Model 10 gives a spectrum coverage of 2250-6250A in the first order, dispersion of 16A/mm and an actual resolving power of 32,000.

Model 11 provides a spectrum coverage of 3700-7400A in the first order and 1850-3700A in the second order. Dispersion in the first order is 15A/mm and in the second, 7.5A/mm. Resolving power actually obtained in practice is 70,000 in the second order.

(Manufactured by Bausch & Lomb Optical Co., Dept. CP, 626 St. Paul St., Rochester 2, N. Y. . . . or for more information check CP 6483 on handy form, pages 2 and 3.)

The Problem...

Do you require a large-sized dish for the controlled evaporation of heat-sensitive chemicals?

Do you have a **Special**
Laboratory Heating
Problem?



For safe, controlled heating of inflammable liquids, consult Glas-Col.

U. S. Patent No. 2,231,506
U. S. Patent No. 2,282,078

The Solution . . . HEATING MANTLE FOR 36-LITER EVAPORATING DISH

This problem can be solved with the 36-liter Glas-Col evaporating dish shown above. Many solutions contain heat-sensitive chemicals and must be evaporated under carefully controlled conditions to avoid damage to an expensive product. Note that this mantle, shown above, contains three heating circuits of 800 watts, 115v each. The circuits are arranged one above the other so that, as the liquid level recedes, the upper circuits can be turned off to avoid superheating the bare wall. With a Powerstat attached to each circuit, absolute control can be maintained throughout the entire course of the evaporation.

Glas-Col standard heating mantles, in many sizes and shapes, are available in glass or quartz fabric construction. For a solution to your laboratory heating problems, consult Glas-Col engineers, today, for their recommendations.

Glas-Col Apparatus Company, Inc., Dept. CP, 711 Hulman Street
Terre Haute, Indiana

WRITE FOR GLAS-COL BULLETIN NO. 4

GLAS-COL ALSO HAS STANDARD MANTLES FOR THESE APPLICATIONS

- Fractionations
 - Liquid-phase cracking
 - Digestions
- Extractions
 - Distillations
- Vapor-phase cracking
 - Rapid distillation of water
- Size from 100 ml to 72,000 ml
- Wattages from 120 to 8,000 watts
 - Temperatures to 650C

Broad Line of Electric Heating Mantles



Mantle for
Resin Reaction
Flask



Mantle for
Molecular
Still



Series M
Heating
Mantle



Spherical Mantle
for Two-neck Flask
with Side Opening

GLAS-COL

Trademark Registered U. S. Patent Office

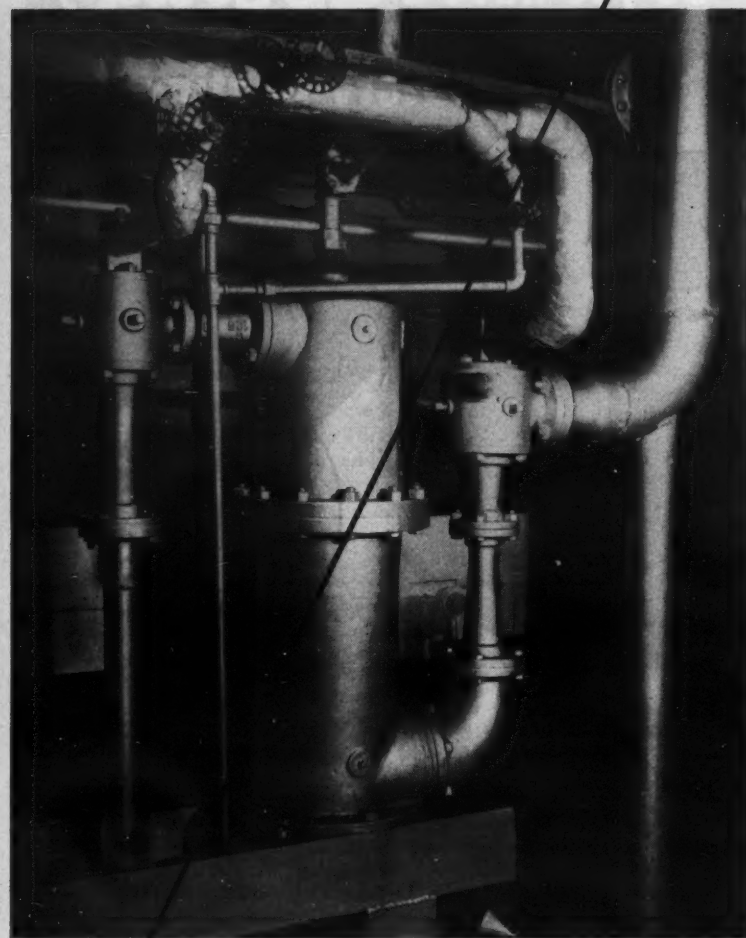
**Specialists in Laboratory and Pilot
Plant Heating Problems**

Electric Heating Mantles

When inquiring check CP 6484 on handy form; pgs. 2-3

SHORT CUT TO LOW COST VACUUM

This is one of several Elliott two-stage steam jet ejectors in use in a Louisiana sugar mill.



You can go the long way 'round in pulling vacuum for evaporators and vacuum pans — using steam to drive a turbine or engine which in turn drives a piston vacuum pump. You can also pull vacuum by using the steam directly, in jet form, to pull the air and vapors, as in Elliott steam jet ejectors. That way you avoid many moving mechanical parts, all needing constant lubrication and occasional replacement due to natural wear.

The simple steam jet does it all. Nothing to wear out, to require attention, to add maintenance costs. That's why in many modern sugar refineries, Elliott ejectors are tucked away anywhere in the plant, high or low, indoors or out, pulling vacuum the simple, direct, economical way.

ELLIOTT *Steam Jet* EJECTORS

are available in single or multi-stage, with condensers as required, and backed up by Elliott ejector know-how — at your command without obligation. Informative bulletins at request. Contact your local Elliott representative or write Elliott Company, Jeannette, Pa.

ELLIOTT Company

INDUSTRIAL PROCESS DIVISION

STEAM TURBINES • MOTORS • GENERATORS • DEAERATING HEATERS • EJECTORS • CONDENSERS • CENTRIFUGAL BLOWERS • TURBOCHARGERS • TUBE CLEANERS • STRAINERS

G3-5

When inquiring check CP 6485 on handy form, pgs. 2-3



FOR THE LABORATORY

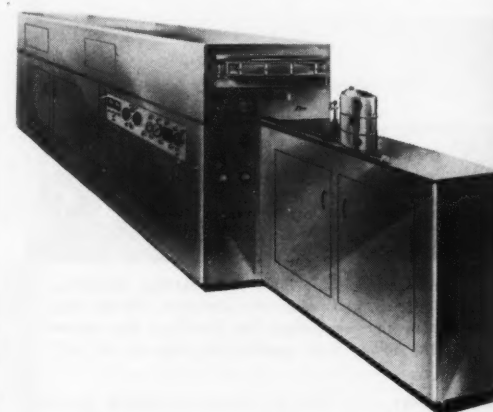
Offers high resolution and dispersion . . .

plane grating spectrograph resolves to 100,000 at 3000 Angstrom units

Uses: Spectrograph covers entire range from 2000 to 6500 Angstroms with high resolution at a single setting.

Features: Interchangeable gratings can be employed for wide wavelength coverage, ordinary analytical work, or high dispersion in the first order without danger of overlapping higher wavelengths.

Description: Spectrograph has special advantages in analyzing isotopes, in the study of line shapes, or in analyses involving high dispersion or



Interchangeable gratings adapt instrument to a variety of uses

low concentration. Instrument is completely stigmatic. Theoretical resolving power of the spectrograph ranges from 75,000 in the first order to 600,000 in eighth order. Resolution is guaranteed to 100,000 at 3000 Angstroms.

Light from the slit passes under plane grating to a large mirror which reflects it in parallel beams to the grating. Light returned by the grating consists of parallel bundles of rays for each wave length. Separate bundles diverge at angles in accordance with dispersion of the grating. Rays strike upper part of concave mirror (camera mirror) to focus on a plate holder. Mirror itself is large because of the divergence of the rays — collimating mirror is 16" in diameter and covers a 30" plate.

Standard spectrograph is supplied with 20" plate holder which will accommodate two 4 x 10" plates end to end. With a 15,000 line/inch ruling, plates cover range from 2200 to 4700 Angstroms in a continuous spectrum at a dispersion of 5 Angstroms per millimeter. Dispersion has been selected because it has proved useful for general purpose work. Where routine quantitative work allows use of shorter range, a single 10" or shorter plate can be used in the 20" plateholder. For unusual applications the 30" plateholder can be

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FOR THE LABORATORY

provided covering range of the first order of 3750 Angstroms. Actual range changes are made by rotating grating.

Two other gratings are available for unusual applications — a 7500 line/inch ruling for wide wavelength coverage and a 30,000 line/inch ruling for high dispersion in the first order without danger of overlapping higher wavelengths. When two or more gratings are supplied they may be interchanged by a Kelvin type mount or may be mounted on a grating interchanger nosepiece operating like a microscope nosepiece.

Shutter, wavelength, and plate racking mechanisms are controlled by pushbutton. Spacing of plate racking mechanism gives spectra 1, 2, and 3 millimeters apart as selected. Adjustable or fixed slits are optional.

(Spectrograph is a product of Jarrel-Ash Co., Dept. CP, 26 Farwell St., Newtonville 60, Mass. . . or for more information check CP 6486 on handy form, pages 2 and 3.)

Provides stepless control from room temp-270°F

Uses: For general lab work.

Features: Hot plate employs extra-sensitive thermostat for stepless control from room temperature to 270°F. Cast aluminum top plate heats evenly, reaches peak temp in 25 min. Surface plate temp varies less than 3° at any point over full heating range.

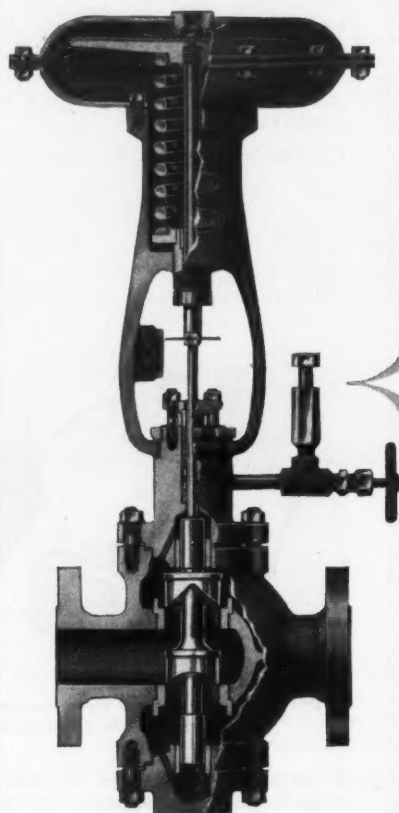
Description: Unit has round, 7" diam, is 4" high; operates on 110v, 25-60 cy AC only. Power rating is 660w, 6 amp.

(Model 2500 hot plate is product of Thermo Electric Mfg. Co., Dept. CP, 476 Huff St., Dubuque, Iowa . . . or for more information check CP 6487 on handy form between pages 2 and 3.)

Issues comprehensive guide to radiation detection equipment

Illustrated 58-page guide shows radiation detection equipment. Brochure is divided into three sections: Section I covers electronic equipment, including scalars, special electronic instruments and nuclear reactor control equipment. Complete technical specifications as well as panel and chassis photographs of all instruments are included. Section II covers radiation counter tubes of all types, scintillation counting equipment, health instruments and accessories. Section III covers glass apparatus, scintillating crystals and liquids, special chemicals and gases, and thin films.

Cat 15 is issued by Dept. PF-11, Radiation Counter Laboratories, Inc., Dept. CP, 5122 West Grove St., Skokie, Ill. When inquiring specify CP 6488 on handy form, pages 2 and 3.



PLUS VALUES **Originate and Become "Standard"** **FIRST** **in MASONEILAN Control Valves**

Within the last decade many extra quality design features in control valves have been originated by Mason-Neilan. Some have been imitated so widely that today they are almost commonplace. Others are available only in Masoneilan Control Valves. All have contributed to improvement in the vital part the valve plays in process control. For example:

1. SOLID V-PORT VALVE PLUGS:

Practically eliminate tendency to "spin", once a major limitation with the V-port design. Eliminate squeal or shriek, prevalent with the hollow-skirt design. Improve stability.

2. FIELD INTERCHANGEABILITY OF PARTS:

Reduces down-time for service work; eliminates remachining replacement parts to obtain fit. Made possible by rigid uniformity control.

3. STANDARD 6-30 PSI RANGE:

(In addition to usual 3-15 psi range) Gives double the power where desirable — available in all sizes *without extra cost*. (Note: All Masoneilan Pneumatic Controllers available with this output range — no extra charge.)

4. PISTON TYPE VALVE PLUGS:

Percentage Piston trim makes wide range percentage flow characteristics available in small valve sizes up to 1".

5. SPRING STEM KEYLOCK:

Eliminates plugstem-springstem connection loosening due to torsional stress. Standard on valve sizes 3" and larger.

6. BOLTED STUFFING BOX ON ALL SIZES

of iron and steel valves — provides leak-free seal with minimum friction — gives visual indication of need for repacking or adjustment.

7. REMOVABILITY OF YOKE WITHOUT DISTURBING STUFFING BOX:

Facilitates field servicing; large bonnet spud increases strength of connection to yoke.

8. ENGINEERED REDUCED CAPACITY TRIM:

Point-4-Factor Trim standardizes sizes; offers only logical solution to reduced capacity trim problem; simplifies selection.

9. COMPLETE INFORMATION ON SERIAL PLATE:

Saves time for maintenance men, facilitating service, reducing down-time.

These examples of progressive design plus built-in accuracy, stamina and economy are tangible reasons why Masoneilan Control Valves are preferred all over the world — wherever quality of product depends on quality of equipment.

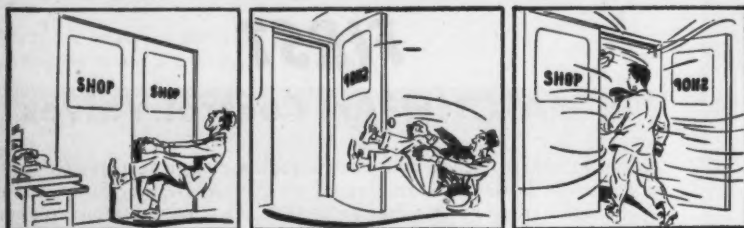
MASON-NEILAN **REGULATOR CO.**

1203 ADAMS STREET, BOSTON 24, MASS., U. S. A.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Odessa • Dallas • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 6489 on handy form, pgs. 2-3

Is Your Factory Starved for AIR?



If this is what happens when you go from the office out into the shop, your plant is starved for air! The vacuum created by the operation of necessary exhaust equipment is usually responsible. While our pictures may be slightly overdrawn, something like that may be happening in your plant.

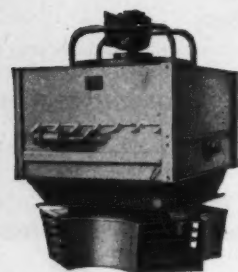
If your building is not new, the vacuum may be relieved by crevices, loose-fitting doors, windows, and open doors which will admit so much unheated air that a great deal of discomfort may be caused and your present heating system will be entirely inadequate.

If the building is tight—no excess crackage and no frequently opening doors—the ventilating system which you so painstakingly designed and installed to protect your employees and increase production won't work properly, unless you make special provisions for delivering

ing into the building an amount of warmed air at least equivalent to that which your exhaust system will take out.

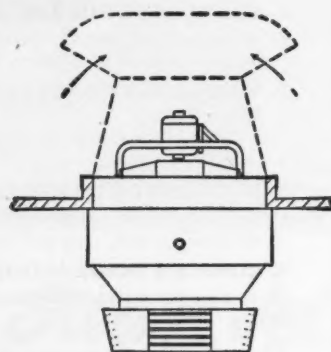
There is an easy solution. Install WING FRESH AIR SUPPLY HEATERS with Revolving Discharge Outlets. In winter they bring in fresh air through heating coils varied to just the right temperature, replacing exhausted air. In summer, with the steam turned off, they circulate the air in your plant, giving a cool, refreshing sensation to the workers and keeping production up to normal in stifling weather.

WING FRESH AIR SUPPLY HEATERS



WING Fresh Air Supply Unit with fan enclosed in casing.

(Right) WING Fresh Air Supply Unit with fan above roof line.



Wing

L.J. Wing Mfg. Co. Linden, N.J.
175 Vreeland Mills Road

Factories: Linden, N.J. & Montreal, Canada
In Europe: Etah, Wansan, Brussels, Belgium



When inquiring check CP 6490 on handy form, pgs. 2-3

FOR THE LABORATORY

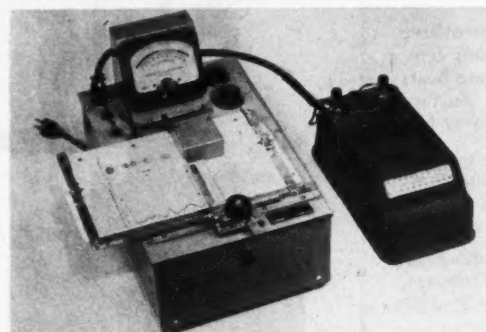
Versatile unit simplifies measure in paper electrophoresis . . .

can also be used effectively for filter paper chromatography

Uses: Designed for scanning of strips or sheets of filter paper which have been used for partition chromatography or paper electrophoresis with subsequent treatment to develop appropriate color spots or bands. Optical transmission density of the spots, measured in a specific spectral band, serves as an indication of the amount of various separated substances which are present in the material analyzed.

Features: Advantages of the unit are its simplicity, convenience and speed of operation, a minimum of operating controls, high accuracy, and versatility for the various techniques and applications.

Description: The Photoelectric Densitometer Model 425 combines in a single complete unit, ready for operation, the light source and its power supply in the instrument case; the photocell, the indicating microammeter and all operating controls on the panel. Various attachments can be added to cover many additional applications.

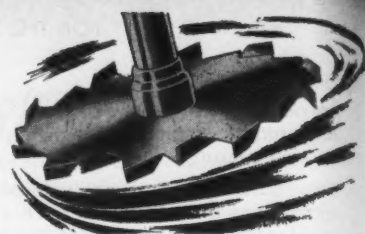


Unit is applied in paper chromatography and paper electrophoresis measurements

Without attachments and accessories, the unit is ready for use in those situations where a guide or a mechanical advancing mechanism for paper strips are not required. In this form, the instrument is used for measurements on individual color spots or bands of filter paper which the operator adjusts by visual observation so that the spot comes into alignment with the light beam emerging from the aperture.

The unit is fully prepared to take all the attachments available or any combination of attachments. The necessary fastening holes are drilled and tapped in advance on the top panel of the instrument.

The light source is mounted on the underside of the instrument panel just below the measuring aperture. Optical system includes a cylinder lens which produces a long and narrow light spot, crosswise to the long dimension of the paper strip.



read these FACTS

1 NO BAFFLES NEEDED

The Cowles Dissolver mixes your batch thoroughly without using baffles—thanks to its high speed and the speed differential between the rotary motion of the batch and the impeller.

2 SOME VORTEX DESIRABLE

Don't be afraid of vortex! Some vortex is desirable because it provides a means for checking the impeller feed in the Cowles high speed centrifugal action.

3 NO PLUGGED-UP HOLES

The Cowles Dissolver has no slots or holes that can become plugged up with large chunks or balls. This makes cleaning faster, easier.

It dissolves and disperses 2 to 20 times faster in the same space ordinary mixers require. Saves time, saves labor—improves both your product and yield per batch.

Then Choose

THE
Cowles
DISSOLVER



The Cowles Company
INCORPORATED

FREE CATALOG

THE COWLES COMPANY, INC.
113 Trackside, Cayuga, N.Y.

Please send me your latest Cowles Dissolver Catalog

NAME _____
COMPANY _____
STREET _____
CITY & STATE _____

When inquiring check CP 6491 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

Measurements may be made on larger areas by removing the lens from its holder and moving the lamp nearer the aperture.

Photocell is of the self-generating barrier-layer type and is mounted face down in a holder which is hinged to the panel of the unit. Photocell and its holder can be swung back and away from the filter paper strip to permit adjustments and visual observation as well as giving access to color filter in its holder.

Among the useful accessories is a guide for paper strips intended for use where a large number of measurements are to be made, either by separate readings on individual spots or by continuous readings along a straight line. This attachment provides stepless guiding of the strip. Also available are a frame for step-by-step advancing of strips, a motor drive assembly for advancing the paper when using the guide attachment, and a scanning stage for semi-automatic construction of density curves.

(Densitometer and attachments are manufactured by Photovolt Corp., Dept. CP, 95 Madison Ave., New York 16, N. Y. . . . or for more information check CP 6492 on handy form, pages 2 and 3.)

Measuring microscopes make linear measurements with optical precision . . .

scales read directly to 0.001 or 0.002"

Uses: Recommended wherever a wide field measuring microscope is required. Areas up to 9/16" in diameter may be inspected and measured.

Features: Design of unit does not allow contact with the work, which eliminates distortion or variations due to differences in "feel." To operate unit, simply place object to be measured in the field of view . . . focus . . . read graduations. Easy to use even by untrained personnel.

Description: Measuring microscope is available in two models in the Series GR Optometer. Model GR-1 has a field of view of 9/16", magnification of 20X, and graduations of 0.002". Model GR-2 has a field of view of 9/32", magnification of 40X, and graduations of 0.001".

Both models have a built-in illuminator which permits examination of holes and cavities. Prismatic attachment converts the unit into an innerwall microscope for inspection of cylinders and tubular sections. Microscope tube is easily removed from the holder for use as a portable microscope. Units are supplied with a universal base. This base includes a swivel mounted workholding vise, rotating stage, and double reflecting mirror for examinations by transmitted light.

(Series GR Optometers are manufactured by National Instrument Co., Dept. CP, 5005 Queensbury Ave., Baltimore 15, Md. . . . or for more information check CP 6493 on handy form located between pages two and three.)

INTERNATIONAL NICKEL COMPANY USES



LINDBERG HIGH FREQUENCY COMBUSTION UNIT

In Bayonne, New Jersey, a Lindberg High Frequency Combustion unit . . . and a gravimetric carbon train are in every-day use at the Bayonne Works of the International Nickel Company.

International Nickel and hundreds of other companies throughout industrial America are using Lindberg High Frequency Combustion units for the ignition of metal samples in carbon and sulfur determinations.

Here are some of the reasons-why:

- Lindberg "HF" combustion units are ready for instant use . . . preliminary warm-up only once a day requires 57 seconds.
- They take only a small fraction of the power

required by resistance element furnaces.

- "Vycor" glass combustion tube permits easy visibility of operation . . . costs only one-half as much . . . lasts many times longer than the old, conventional furnace tubes.
- Only samples are heated . . . no excess heat in laboratory . . . no elements to burn out.

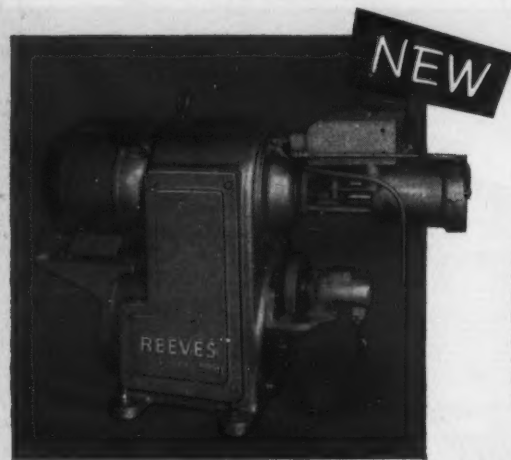
For additional information call your nearest laboratory equipment dealer . . . or write for bulletin #1000.

**Leading Laboratories Like
LINDBERG LABORATORY EQUIPMENT**

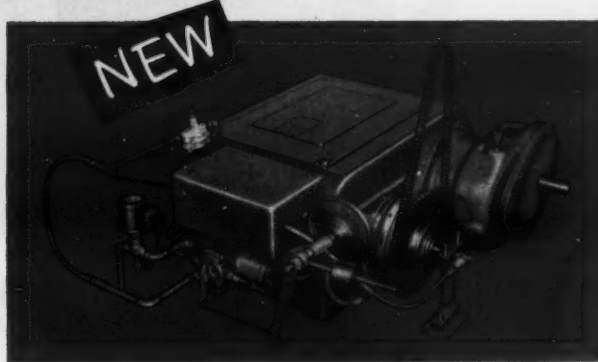
LINDBERG LABORATORY EQUIPMENT
Laboratory Division, Lindberg Engineering Company, 2480 West Hubbard Street, Chicago 12, Illinois

When inquiring check CP 6494 on handy form, pgs. 2-3

You're automatically right with REEVES*



AUTO-PNEUMATIC—for automatically controlling liquid levels in tanks, maintaining constant temperatures, pressure and other variables, and monitoring flow systems of liquids, gases or chemicals with linear output speeds.



AUTO-TENS—for automatically controlling tension on web-type materials without floating roll, compensating roll, follower roll or other complex mechanisms.

* REEVES' complete line of variable speed drives and eight automatic controls assure you the right combination to operate your machines more efficiently, more profitably, *automatically*! Regardless of your production problems—controlling tension, acceleration or deceleration, velocity and peripheral speed—synchronizing one or more machines—or maintaining uniform temperature, pressure, liquid level or liquid flow—REEVES has the solution to automatic production in your plant. Write today for the most complete booklet published on Automatic Production Control—with application photos, schematic drawings and actual solutions to production control problems. Specify Dept. CE1-G.

REEVES PULLEY COMPANY • COLUMBUS, INDIANA



When inquiring check CP 6495 on handy form, pgs. 2-3

LABORATORY

Designed for counting gamma-emitting samples

Uses: For efficient counting of gamma-emitting samples.

Features: High sensitivity of the unit allows activities as low as 0.00001 microcurie to be assayed.



Counter for gamma-emitting samples

Description: The Model DS-3 Scintillation Well Counter is provided with a thallium-activated sodium iodide crystal and has a plateau length of at least 200 volts. A DuMont 6292 phototube and a built-in preamplifier provide an output pulse in excess of one-quarter volt, allowing the unit to be used at the G-M input connector of any scaler or counter meter.

Gamma-emitting samples are prepared in standard test tubes or centrifuge tubes and then inserted directly into crystal well.

(Product of Nuclear-Chicago, Dept. CP, 229 W. Erie St., Chicago 10, Ill. . . . check CP 6496 on handy form, pages 2 and 3.)

Measures impacts up to 5000g

Single sheet describes features of accelerometer designed for high impact shock measurements. Instrument is said to have relatively high sensitivity and is useful up to 5000g. Size is 1 x 1 1/2 x 7/8" and weight is 2 ounces.

Bul A105 is issued by Gulton Mfg. Corp., Dept. CP, Metuchen, N. J. When inquiring specify CP 6497 on pages 2 and 3.

Get Constant, Uniform Heat Distribution with
FISHER ISOTEMP OVEN



The Fisher Isotemp Oven is a well-constructed, gravity-convection oven that provides both constant temperatures and uniform heat distribution throughout the entire oven chamber. The temperature within the oven can be set for any degree within the range of 35° to 200° C. and a sensitive thermostat maintains the temperature of the oven chamber within ± 0.50 C.

Isotemp oven chambers are constructed entirely of heavy sheet aluminum. A safety door latch releases automatically should any abnormal pressure be built up in the chamber. The interior is corrosion-resistant and the exterior is attractively finished in smooth gray and black hammertone.

3 MODELS AVAILABLE

Forced Draft Model . . . Chamber 10 3/4" wide, 12" high and 12 1/2" deep
Regular Model . . . Chamber 12" wide, 12" high and 12 1/2" deep
Senior Model . . . Chamber 18" wide, 18" high and 15" deep

Send for **FREE** booklet FS-230-HH. It provides complete description and specifications of the three Fisher Isotemp Ovens.



FISHER SCIENTIFIC

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717 Forbes St.

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ST. LOUIS (18)
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Silver Spring, Md.

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America's Largest Manufacturer-Distributor of Laboratory Appliances and Reagent Chemicals

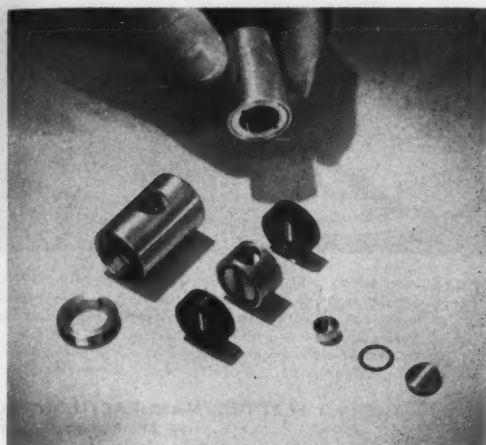
When inquiring check CP 6498 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Ultracentrifuge cell extends range of analysis downward in the macromolecular region . . .

creates boundary between solutions synthetically and reproducibly in a rotating cell

Uses: Devised to permit measuring the sedimentation constant of a slow component moving in the presence of a fast component.



Permits use of ultracentrifugal analysis over wider molecular weight range

Features: Extends range of ultracentrifugal analysis downward in the macromolecular region from molecular weights of about 10,000 (the former practical lower limit) to about 500.

Description: Boundary between slow and fast components is created synthetically and at a reproducible speed in the Spinco Synthetic-Boundary Ultracentrifuge Cell. Measurements of the movement of this boundary are made by conventional optical methods. Although structurally resembling a standard analytical ultracentrifuge cell, this unit is designed to permit layering of the two components during acceleration of the rotor through utilization of a special rubber valve assembly.

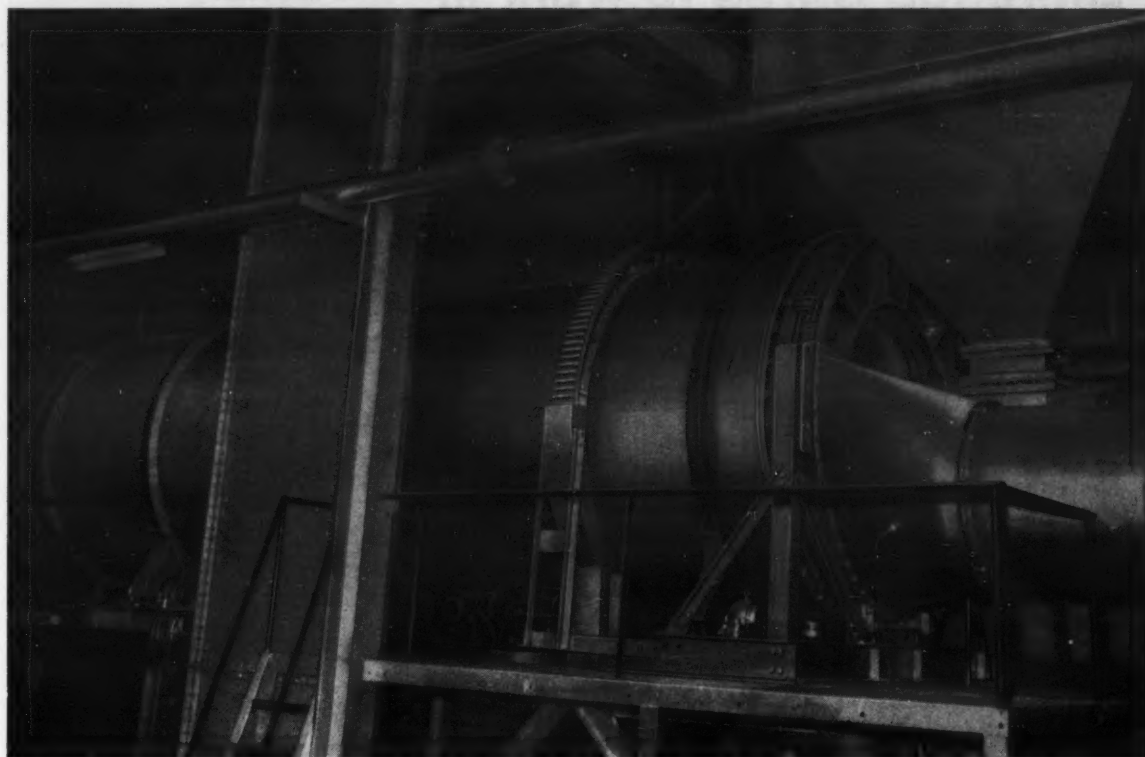
(Manufactured by Specialized Instruments Corp., Dept. CP, 629 O'Neill Ave., Belmont, Calif. . . . or for more information check CP 6499 on handy form, pages 2 and 3.)

Standard and custom-made heating mantles described

Illustrated 4-page bulletin describes manufacturer's line of heating mantles. Standard models and ordering specifications for custom models are shown. Construction and operational features are highlighted.

Bul 553 is issued by Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. When inquiring specify CP 6500 on handy form, pages 2 and 3.

Get the correct dryer for your process



Roto-Louvre dryer's gentle drying principle is ideally suited for processing fragile or heat-sensitive materials.

LINK-BELT builds 3 types of dryers ... offers free testing service

WHAT's your drying problem? Heat sensitive materials? Fine particles? Materials that case-harden? These factors, plus many others, govern the selection of the correct dryer to match your production process. That's why Link-Belt builds three types of dryers—Roto-Louvre, Multi-Louvre and Monotube. And that's why we offer free analysis of your material. Simply send us a sample—a pound or a ton. Utilizing our laboratory facilities, we'll test it . . . work out procedures that can be duplicated in your plant. You'll get an unbiased recommendation for the most economical installation. Get all the facts on this no-obligation service from your Link-Belt office.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.

LINK-BELT
DRYERS • COOLERS • ROASTERS



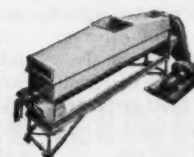
ROTO-LOUVRE

Drum design provides aerated mass drying. Will not damage heat-sensitive materials. Gradual positive heat transfer prevents case-hardening. Ask for Book 1911-B.



MULTI-LOUVRE

For rapid treatment of large quantities of material. Uniform, constant agitation promotes efficient, uniform drying with minimum degradation. Ask for Book 2409.



MONOTUBE DRYER

For small, inexpensive installations. Excellent for fine-particle materials. Minimizes dusting. Equally effective at high or low temperatures. Ask for Book 2413.

When inquiring check CP 6501 on handy form, pgs. 2-3

NEW BLUE M JAR BATH

Entire top is free to work in

Top totally free for tests

AUTOMATIC DUAL MICROTROL
Selects and repeats 2 most used temperatures U.L. Approved



No Motors • No Stirrers

100% Visibility • Temperature Constancy $\pm 0.1^\circ\text{C}$

Blue M's Unique method of agitation—gives new added convenience. Saves cost and time. Silent and Efficient . . . No moving parts . . . Safe . . . No work breakage. Gives years of uninterrupted service.

Scientifically designed Pump plate is pulsed up and down by timed energization of electro-magnet located in base. Gives gentle agitation—thorough and efficient—in all areas.

SIZES and PRICES

Model	Jar Size	Price
MW-1152	8 1/4" dia. x 8" high	\$117.50
MW-1162	12" dia. x 12" high	159.00
MW-1172	16" dia. x 12" high	225.00

Above prices for range to 70°C .
Slightly higher for range to 100°C .
Standard voltage: 115 volts/50-60C/A.C.

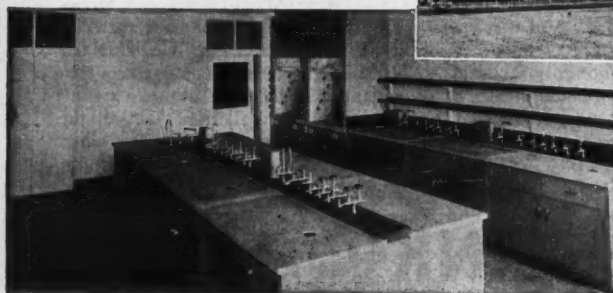
Write for Bulletin

BLUE M ELECTRIC COMPANY 306-308 West 69th Street, Chicago, Illinois

When inquiring check CP 6502 on handy form, pgs. 2-3

In Well-Equipped, Modern Labs it's ALBERENE

table tops, sinks and hoods



Esso Research Center of the Standard Oil Development Company at Linden, N. J. Over 12,000 square feet of Alberene Stone are used in the new lab's table tops and sinks.

You'll find many of the newest and finest laboratories in the country are equipped with table tops and sinks of Alberene Stone. Because Alberene Stone is a natural material that is highly corrosion-resistant . . . durable . . . and attractive. And . . . because Alberene Stone is easy to handle—easy to drill and cut.

Alberene offers you expert engineering assistance based on more than fifty years experience in equipping laboratories. For information and technical advice, just write Alberene Stone Corporation of Virginia, 419 Fourth Avenue, New York 16, N. Y. Or better yet—why not visit our nearest branch office?

ALBERENE STONE

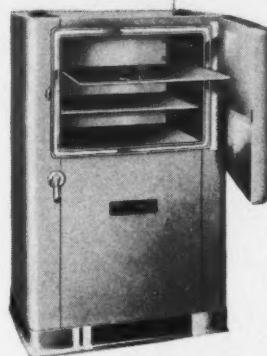
When inquiring check CP 6503 on handy form, pgs. 2-3

LABORATORY

Three-way variable air flow feature of lab oven

Uses: For all functions of drying, aging, heating, etc.

Features: Unit incorporates 3-way variable air flow, with high pressure blower providing uniform air velocity through working chamber by series of perforated



walls. Damper regulates velocity from 75 to 250 ft/min.

Description: Ovens, in three floor sizes, have stainless steel interior and exterior finished in gray hammerloid.

Inconel-sheathed heaters and hydraulically-operated, UL-approved thermostat are easily replaced. Back of oven is removable for inspection.

("Force-Aire" ovens are products of Labline, Inc., Dept. CP, 217-21 N. Desplaines St., Chicago 6, Ill. . . . or check CP 6504 on handy form between pages two and three.)

Details workings of colorimeter

Illustrated 4-page bulletin gives operational features of automatic color difference meter. Instrument gives color difference without slide rule, by means of three electro-color activated dials. Construction details and uses are covered.

Bul 144 is issued by Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Maryland. When inquiring specify CP 6505, pages 2 & 3.

TEMCO ELECTRIC FURNACES

used for accurate ashing of dust samples from atomic tests by ATOMIC ENERGY COMMISSION



Every day, more plants and laboratories are switching to TEMCO bench-type electric furnaces for precision results in process control, general lab work and heat treating of small parts, tools, dies, etc. 1500 Series shown above is one of eight different sizes available—with either manual or electronic controls. Easy to install and operate, economical. \$55 to \$507. Write for data and nearest dealer's name.

THERMO ELECTRIC MANUFACTURING CO.
476 HUFF ST., DUBUQUE, IOWA

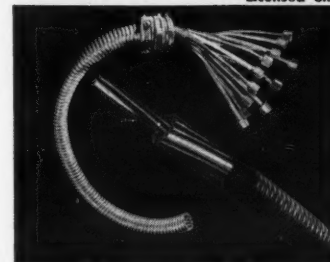
When inquiring check CP 6506 on handy form, pgs. 2-3

FOR BETTER INSTRUMENT CONTROL

C R E S C E N T

ARMORED MULTITUBE

Licensed under U. S. Patent 2,578,280



— carries air, gas or fluid on moderate to long runs

1/4", 5/16", 3/8" & 1/2" O.D. TUBES

From 3 to 19 Tubes twisted together, protected by flexible, interlocked, galvanized steel armor. One colored tube in each layer permits ready identification at each end. Bends without any distortion of tubing. Tubes available in copper, aluminum, polyethylene and other plastics. CRESCENT ARMORED MULTITUBE gives a better protected installation with substantial savings.

SEND FOR BULLETIN

C R E S C E N T
INSULATED WIRE & CABLE CO.
TRENTON 5, N. J.

When inquiring check CP 6507 on handy form, pgs. 2-3

CHEMICAL PROCESSING

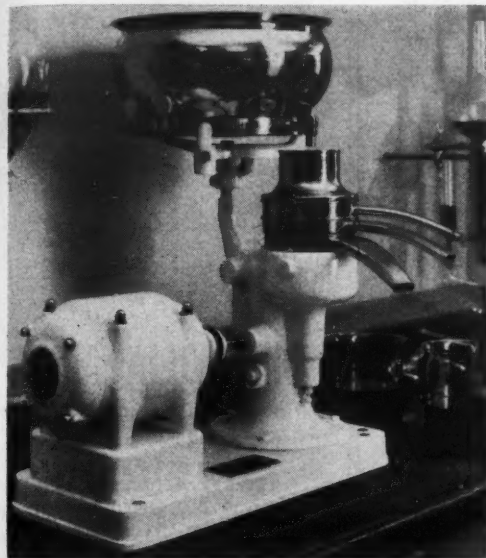
FOR THE LABORATORY

Continuous action of lab unit permits small scale studies of centrifuging . . .

unit achieves 7500 gravities with $\frac{1}{2}$ horsepower

Uses: For laboratory tests in continuous concentration, solvent extraction, liquid clarification, and centrifugal mixing.

Features: Unit provides small-scale preliminary tests for evaluation of centrifugal methods. Results of tests can be used to predict performance of full-scale centrifuges.



Multi-purpose centrifuge employs four bowls

Description: Multi-purpose Westfalia LWA-205 has $\frac{1}{5}$ to 2 gpm capacity, operates on $\frac{1}{2}$ hp, 110/220/440 volts.

(Westfalia LWA-205 is product of Merco Centrifugal Co., Dept. CP, 150 Green St., San Francisco 11, Calif. . . . or check CP 6508 on form located between pages 2 and 3.)

Spectrometer sensitive to one part in 10,000,000

Data bulletin illustrates and describes high resolution nuclear magnetic resonance spectrometer. Unit is designed for rapid non-destructive analyses of chemical bonding situations leading to identification and measurement of components in a mixture. Bulletin contains data on basic operating characteristics; general arrangement of sub-units encompassing the probe, radio-frequency transmitter and receiver, sweep device, power supply.

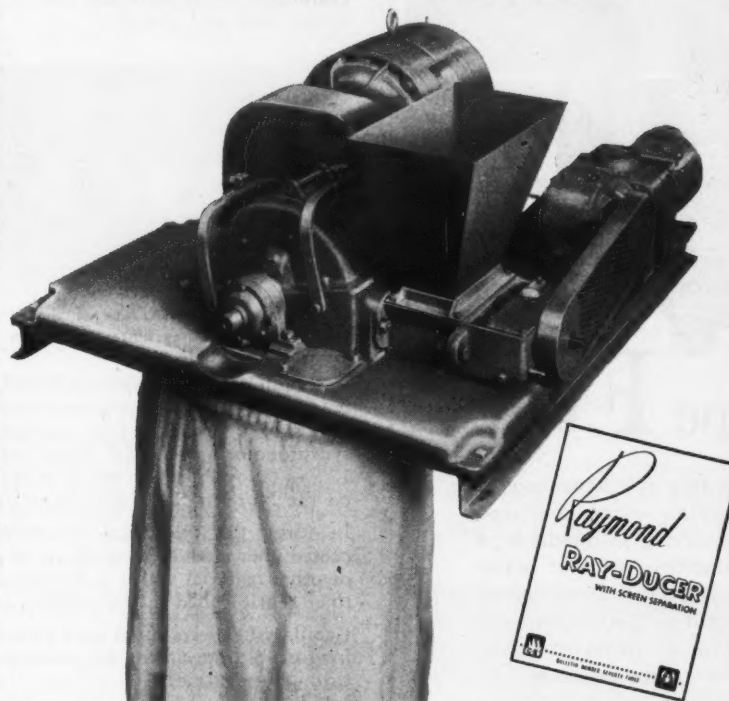
Bul 40 is issued by Varian Associates, Dept. CP, 520 Hansen Way, Palo Alto, Calif. When inquiring specify CP 6509 on form located between pages 2 and 3.

For Your Small Pulverizing Jobs

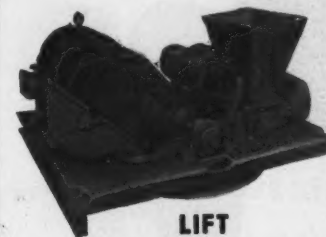
The New RAYMOND

RAY-DUCER

A LOW-COST PRODUCER OF POWDERED MATERIALS



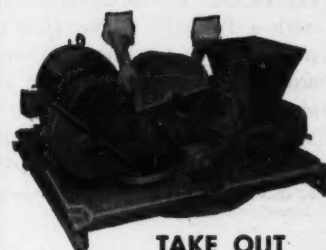
EASILY ACCESSIBLE FOR CLEANING OR CHANGING SCREENS



LIFT COVER



TILT CARRIER



TAKE OUT SCREEN UNIT

This compact grinding unit may well be the practical answer to your production problem in handling small and medium capacities economically.

The RAY-DUCER is the latest addition to Raymond's extensive line of pulverizing and separating machinery. It is especially adapted for grinding and disintegrating a wide range of soft materials.

Its quick accessibility is an important time-saving feature when making different grades, mixtures or types of materials. Only a few seconds required to open the machine for clean-out or screen change.

Write for Bulletin No. 73 for further details and applications of the RAY-DUCER.

RAYMOND builds a complete line of grinding and separating machinery in capacities up to 30 tons or more per hour . . . also specialized equipment for drying and pulverizing in one operation. Write for details.

COMBUSTION ENGINEERING, INC.

Raymond Division

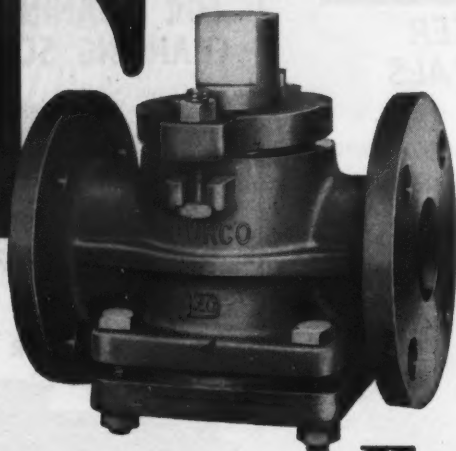
1317 NORTH BRANCH ST.
CHICAGO 22, ILLINOIS

SALES OFFICES IN
PRINCIPAL CITIES

When inquiring check CP 6510 on handy form, pgs. 2-3



is for tough
chemical service



The Durco Type F Valve

It's a valve especially designed to take full advantage of the various DURCO corrosion resisting alloys combined with a Teflon® sleeve. It is now serving in hundreds of plants under extreme corrosive conditions without maintenance, without lubrication and without interruption in service. A DURCO sales engineer will be glad to help you investigate the opportunity for Type F Valves to reduce down-time and costs. Descriptive literature available.

*Registered trademark of E. I. du Pont de Nemours & Company, Inc., for its tetrafluoroethylene resin.

THE DURIRON COMPANY, Inc., Dayton, Ohio

*This coupon will bring literature or a
DURCO representative, as you wish.*



THE DURIRON COMPANY, Dayton, Ohio, CP

☐ Please send literature on the DURCO Type F Valve.

☐ Have engineer call.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

When inquiring check CP 6511 on handy form, pgs. 2-3

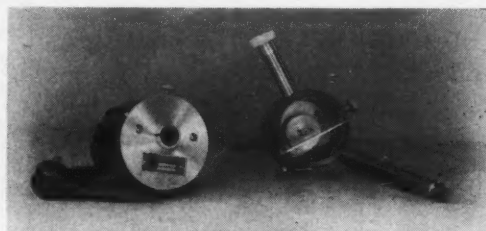
FOR THE LABORATORY

Cylindrical specimen spinner allows use of special X-ray methods . . .

unit is designed to facilitate handling of specimens of limited size and quantity

Uses: Used in place of the standard specimen holder on manufacturer's wide-range goniometer for special X-ray analysis work. Suggested where problem involves individual analysis of small fibers or filaments, the use of sealed capillary tubes, or the coated fiber method.

Features: Permits analysis of specimens of limited size and quantity.



This instrument allows use of special techniques in X-ray diffraction studies

Description: The Norelco Cylindrical Specimen Spinner is rotated at approximately 130 rpm by means of a precision gear assembly driven by a synchronous motor that plugs into one of the 120 v, 60 cycle, single-phase receptacles provided on the Norelco X-ray diffraction unit.

In using the cylindrical specimen spinner, the coated fiber method involves use of a fiber of glass or other material which is dipped in adhesive and then gently rolled in the powdered specimen.

Capillary tubes are often used where specimens are hygroscopic. Specimens are powdered and screened through a 400 mesh.

Powdered material is mixed with a binder to form a paste, then squeezed through a capillary to provide a uniform specimen for work involving extrusion methods.

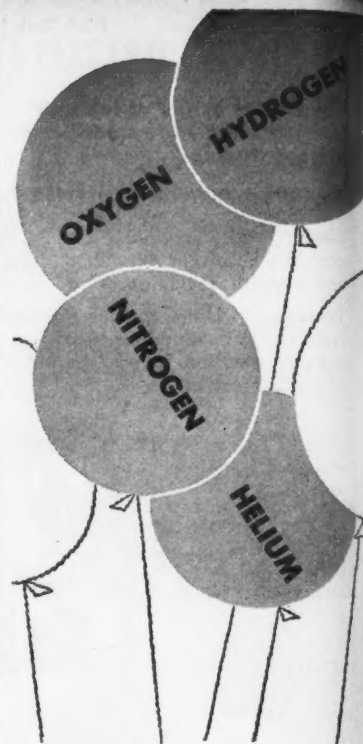
(Spinner is a product of Research & Control Instruments Div., North American Philips Co., Inc., Dept. CP, 750 S. Fulton Ave., Mount Vernon, N. Y. . . . or for more information check CP 6512 on handy form, pages 2 and 3.)

Direct reading of TEL content in gas done with pushbutton instrument . . .

more rapid than gravimetric method, unit assays tetraethyllead in ml/gal

Uses: Accurate, rapid method for assaying TEL in gas.

Features: Unit is direct-reading pushbutton polarographic analyzer which gives accurate assay



MAGNOLIA AIRCO

supplies the southwest!

Magnolia Airco gases and liquids . . . rare gas mixtures . . . xenon . . . krypton . . . and neon conform to specification. You can count on their purity and consistent uniformity—every shipment packaged to your requirement! Consult your nearest Magnolia Airco office for full details.



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Beaumont • Corpus Christi • Dallas • El Paso
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Southwestern Headquarters for Oxygen, Acetylene
and Other Gases . . . Carbide . . . Gas Welding
and Cutting Machines, Apparatus and Supplies
. . . Arc Welders, Electrodes and Accessories.

at the frontiers of progress
you'll find

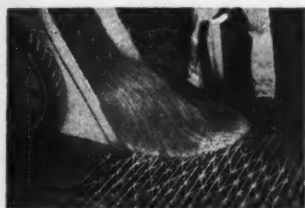


When inquiring check CP 6513
on handy form, pgs. 2-3

CHEMICAL PROCESSING

FLOORING TALK by IRVING GRATING Co., Inc.

There is an answer
to your
Flooring Problem with
IRVING GRATING!



For heavily abused areas:

CONTINUITY ARMOURING

The concrete filled grating floor will
not crack or break up. Low instal-
lation cost. No upkeep problem.

★

For Fire Prevention and
minimum weight*

ALUMINUM GRATING

The spark proof quality of Alumi-
num, and its High Corrosion Resist-
ance make Irving Aluminum Grating
perfect for Chemical plants.

Used for flooring or suspended
catwalks,* (inside or out) it is
non-skid, self-draining, ventilating
and strong.

Also ask about Irving Contour Retainer
Grid for Castable Refractory Materials —
"GRIDSTEEL" (For use in refracting units)

IRVING SUBWAY GRATING CO., INC.

ESTABLISHED 1902

OFFICES and PLANTS at
5050 27th St., Long Island City 1, N. Y.
1850 10th St., Oakland 20, California

When inquiring check CP 6514
on handy form, pgs. 2-3

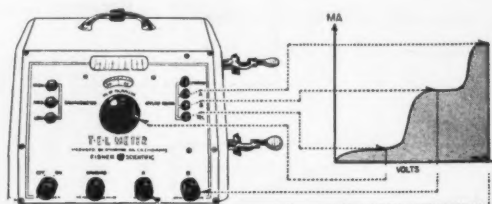
FOR THE LABORATORY

of ASTM "D526 hydrochloric extract of tetra-
ethyllead in gasoline." Instrument meets require-
ments of ASTM-proposed method for polarographic
analysis. Reading is faster than by gravimetric
method and does not need calibration curves of
flame-photometric system.

Description: Instrument works on principle of
the micro-electrodeposition of metal ions on fall-
ing drops of mercury. As metal plates out, a
"diffusion current" is generated in the cell.

If voltage between dropping mercury (cathode)
and pool (anode) into which drops fall, is held at
voltage of metal plating out, size of diffusion cur-
rent is proportional to concentration of metal ions.

Lead has a particular voltage. When its current
is divided by the pilot ion's (cadmium) current,
and same sample size is used, result is automatically
calculated in ml of TEL per gal. Range is 0-5 ml.



Pushbutton meter gives direct reading

In operation, voltage great enough to exceed cad-
mium deposition is first applied (button A). Cur-
rent is then recorded by zeroing galvanometer
with knob A. Second, enough voltage is applied
to plate out lead only (button B), and galvanom-
eter is zeroed with knob B to record.

Last, a voltage too small to plate out either metal
is applied (button TEL), and zeroed with knob
TEL. Results are (1) the electrical subtracting of
residual current, (2) calculation of lead to cad-
mium ratio, (3) translation of ratio into ml of
TEL/gal on dial face.

(T-E-L-Meter is product of Fisher Scientific Co.,
Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. For
more information check CP 6515 on handy form,
pages two and three.)

Factual bulletin lists, describes equipment for gas analysis

Recently-revised bulletin outlines methods for gas
analysis in brief, lists many different models and
types of apparatus, and offers aid in the proper
selection of the units. Five pages are devoted to
an offering of laboratory models of the equipment,
and 10 pages give descriptions of many portable
types for field use. Listed accessories include
reagents and solutions, manifolds, burets, pipets,
oxidation equipment, sampling tubes, etc.

Cat 81 is issued by Burrell Corp., Dept. CP, 2223
Fifth Ave., Pittsburgh 19, Pa. When inquiring
specify CP 6516 on handy form, pages 2 and 3.

GASKETS with GUTS



Chemiseal ^{MADE OF TEFLON} Gaskets

du Pont Trademark

Laugh at Acids, Caustics, Solvents

Chemiseal Gaskets have become standard for corrosion
and contamination problems because—made of TEFLON—
they are inert to all chemicals excepting molten sodium
and fluorine.

Chemiseal Teflon-Jacketed Gaskets are available in any size,
with a variety of filler materials suitable for glass, glass-lined,
porcelain, Karbate, Haveg, stainless or other metal piping
and equipment.

These fillers are protected on both faces and the inside diam-
eter by the chemical resistant Teflon Jacket.

Ask for Catalog No. 1-339 WA.



Chemiseal Snap-On Gaskets,
molded from Solid Teflon
are available with projec-
tions matching grooves in
pipe ends of all conical-end
glass pipe joints. Ask for
Catalog No. 820.

Cut Teflon Gaskets are also
available, either as ring or
full face gaskets for all
standard pipe sizes or for
irregular shaped openings.
Ask for Catalog No. 310.

**UNITED
STATES
GASKET
COMPANY**

**FLUOROCARBON
PRODUCTS DIVISION**

CAMDEN 1, NEW JERSEY

Representatives in Principal
Cities Throughout the World

When inquiring check CP 6517 on handy form, pgs. 2-3

A billion and then some...



INS PHOTO

IN recent years, waste of life and property by fire has increased at an enormous rate. It is approaching a billion dollar annual loss in buildings and equipment alone, to say nothing of lost profits as a result of business interruption.

You can stop fire before it starts with **ENGINEERED "Automatic" FIRE PROTECTION**. It's the service that annually saves millions of dollars for businesses whether they ever have a fire or not.

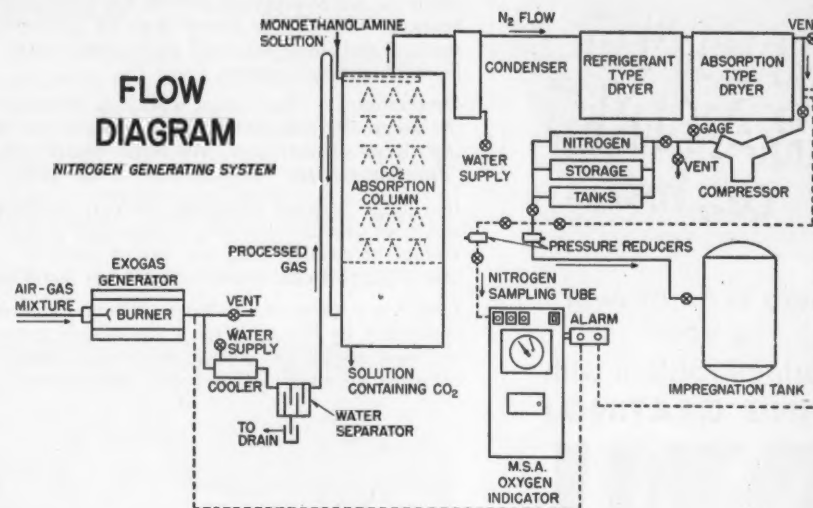


Find out how little it really costs to safeguard life, property and income from fire. Write for the ABC of Fire Protection. It's FREE.

"Automatic" Sprinkler
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO
Offices in principal cities of North and South America

When inquiring check CP 6518 on handy form, pgs. 2-3

safety



Stops oxygen from being explosion menace

Atmosphere policing system continually indicates and records percentage of oxygen in blanketed impregnation step. Sets up howl if oxygen concentration should exceed 25% of pre-determined lower explosive limit

Westinghouse Electric Corporation's equipment engineers at the East Pittsburgh plant have developed their own method of employing inert gases in processing of asphalt or the newer Thermalastic-insulation high voltage coils.

Since insulation is susceptible to ionization in high voltage service, coils require special processing. This includes taping and impregnation of coil members to fill any air spaces that would otherwise occur in the taping, and between it and coil surfaces. Inert atmosphere must be maintained in impregnating tanks above the

level of asphaltic gum or newer copolymer resins. This is provided by using nitrogen, as manufactured by the "Exogas" system.

Nitrogen is compressed, washed, dried and retained in pressure vessels for use as needed as a protective "blanket" over the asphaltic gum or resins in storage, and in impregnation tanks during the impregnation cycle for stator coils.

Oxygen in combination with hot asphaltic gum vapors or resin vapors in the impregnating tanks would not only cause some oxidation of the impregnants but would create an extreme explosion hazard. Thus it is necessary that all oxygen be removed from the atmosphere in contact with impregnants. To do this, Westinghouse has developed a system of policing the atmosphere—not only with impregnating tanks, where nitrogen is used, but also in compressor, piping and storage tanks, and in washing and drying units of the "Exogas" system.

Key to the policing system is an instru-

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Westing
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(Oxygen
Applian
Meade S
formation

ment which continuously indicates and records percentage of oxygen from various sample points within impregnating tanks and gas-generating and processing units. Each sample is automatically analyzed and reading indicated and recorded by means of electronic recorder. Instrument is preset to actuate a klaxon and to flash lights on instrument panel if oxygen concentration should exceed 25% of predetermined explosive limit.

Heart of the indicator is detector cell—essentially a primary cell with one metallic and one hollow carbon electrode immersed in electrolyte housed in a plastic container. Sample to be analyzed is passed through hollow carbon electrode of detector cell. Hydrogen evolved in cell collects at carbon electrode and causes polarization, which manifests itself in decrease of the generated voltage and current. Oxygen from sample diffuses through wall of carbon electrode and combines with hydrogen, producing a depolarization. The more oxygen sample contains, the higher the electric output



Oxygen Indicator is key to oxygen policing system

generated by cell. Because current generated by cell would be affected by variations in temperature, cell is contained in thermostatically controlled water jacket which is maintained at 30°C.

Periodic replacement of carbon electrode (about every six weeks) is simple and spare detector cell eliminates out-of-service time. Electrolyte is replenished once every two weeks and zero, calibration and drift are checked at that time—a procedure requiring less than a half-hour. Only other maintenance point is occasional replacement of dry cell, a #2 flashlight cell, used in drift correction circuit.

Westinghouse engineers are pleased with the system, and according to H. T. Kerr, manufacturing supervisor, use of the oxygen indicator in this way proves it to be a precise, dependable, trouble-free method of maintaining inert atmospheres.

(Oxygen Indicator is a product of Mine Safety Appliances Co., Dept. CP, Braddock, Thomas & Meade Sts., Pittsburgh 8, Pa. . . or for more information check CP 6519, pages 2 and 3.)

SIMPLIFY Respiratory Protection

and Inventory with the AO R5000

(One Face Mask—Seven Sets of Cartridges
Do Work of 7 Respirators)

If yours is a multi-respiratory hazard operation, you can streamline the protection problem and the equipment needed to meet it by concentrating on the AO R5000. This twin cartridge respirator converts to many types of protection by interchanging the following cartridges:



R51—For light organic vapors and gases of paint spraying, degreasing, dry cleaning. B. M. 2304.



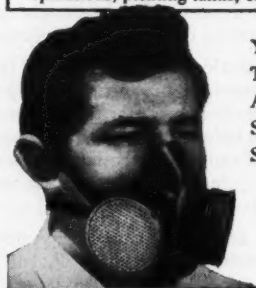
R53—For combined acid and organic gases like carbon tetrachloride and acetic acid.



R52—For acid gases, and mists of plating operations, pickling tanks, etc.



R54—For protection against low or nuisance concentrations of ammonia.



AO R5000
RESPIRATOR

YOUR NEAREST AO SAFETY PRODUCTS REPRESENTATIVE CAN SUPPLY YOU WITH THE FACE PIECE AND COMPONENTS REQUIRED TO MEET YOUR SPECIAL NEEDS. HE ALSO SUPPLIES INDUSTRIAL SAFETY GLASSES AND PROTECTIVE CLOTHING.



SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

When inquiring check CP 6520 on handy form, pgs. 2-3



Respiratory Protection



R55—For workers who are exposed both to organic vapors and all dusts. B. M. 2305.



R56—For fumes produced in welding, burning, smelting and refining. B. M. 2163.



R50—For combination of all dusts, toxic, pneumoconiosis-producing, nuisance. B. M. 2156.



AO's Industrial Vision Program Increases Production, Decreases Accidents. Write today for booklet, "Improved Industrial Vision".



PROTECTOSEAL APPROVED Safety Production Equipment

A PLUNGER CANS

Insure plant and operator safety in all cleaning, sponging and swabbing operations. When plunger is depressed a measured amount of the volatile and flammable fluid rises into the dasher to moisten the swab. Excess liquid flows back into the can and is not left on surface to evaporate or be ignited. Dasher containing fire baffle is self-extinguishing. Five sizes from 1 pt. to 2 gal.

B SAFETY CANS

For general use wherever flammables are employed within the plant. Fire prevention baffle is a double concentric cylinder inside base of spout. Spring-loaded cap automatically makes tight closure. Squeeze-grip handle; positive control while pouring.

C BENCH CANS

Reduce waste, speed production and give positive protection against fire and explosion. The spring mounted perforated metal dasher which also acts as the fire baffle covers the liquid surface and minimizes evaporation losses. A size to meet every requirement.

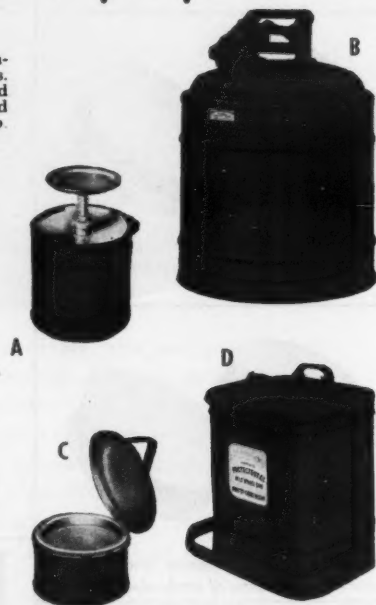
D OILY WASTE CANS

A necessity in every plant for the safe placement of oily or solvent-soaked rags and other waste material. Required by many insurance companies. Full length cover opens wide by slight foot pressure at any point on full width treadle.



THE PROTECTOSEAL COMPANY

1932 S. WESTERN AVENUE, CHICAGO 8, ILLINOIS
In Canada: Safety Supply Co., Toronto



CLIP COUPON, fill in, attach to company letterhead and mail for Complete Catalog and Price List.

THE PROTECTOSEAL COMPANY
1932 S. Western Ave., Chicago 8

Please send complete Catalog of Factory Safety Production Equipment with Price List.

We are especially interested in _____

Name _____

Title _____

Address _____

City _____ Zone _____ State _____

SAFETY

Driver-led electric trucks get OK for semi-hazardous operations . . .

pass rigid specification of Underwriters Lab and National Fire Protection Association

Uses: For material handling in "semi-hazardous" operations involving unusual fire risks.

Features: Trucks carry Underwriters' Laboratories, Inc. EE rating which makes them subject to inspection by Underwriters' engineers any time during construction.

Description: Driver-led electric industrial trucks, the Transporter, Transtacker and Transtractor meet all requirements UL prescribe for Type EE classification. They also pass requirement set forth in Div. 2, classes 1 and 2 of the NFPA code book, outlining material handling operation in semi-hazardous areas.



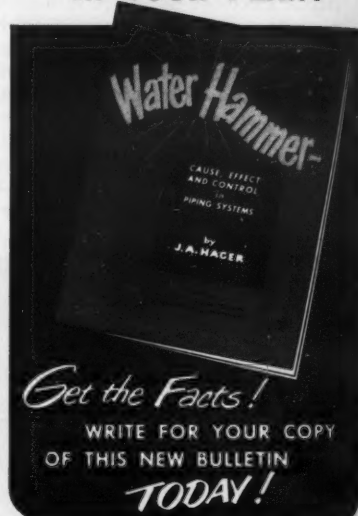
Completely safe for use in paint spraying areas

Typical locations in which the driver-led trucks might be used include:

- 1) Places where flammable volatile liquids, gases, or vapors are used, but where they would become hazardous only in case of accident or in case of unusual operating conditions.
- 2) Locations where dangerous concentrations of suspended dust would not be likely, but where dust accumulations might form on, or in vicinity of, electrical equipment.
- 3) Location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used. These would include textile manufacturing, cotton gins and cotton-seed mills, flax processing plants, clothing manufacturing plants, and woodworking plants.

(Trucks are manufactured by Automatic Transportation Company, Department P, 149 West 87th Street Chicago 20, Illinois . . . or to obtain additional information concerning manufacturer's product reader may simply check CP 6522 on the convenient Reader Service slip which is located between pages two and three.)

WILLIAMS-HAGER FLANGED *Silent* CHECK VALVES WILL ELIMINATE COSTLY, DANGEROUS WATER HAMMER IN YOUR PLANT



Don't let dangerous water hammer wreck the piping system in your plant. Learn the cause, effect and control of this costly nuisance.



THE WILLIAMS GAUGE CO., INC.
3015 Pennsylvania Ave., Pittsburgh 33, Pa.

MAIL THIS COUPON TODAY

THE WILLIAMS GAUGE CO., INC.
3015 Pennsylvania Avenue
Pittsburgh 33, Pa.

Please send a copy of Bulletin WH-851 on "Water Hammer, Cause, Effect and Control in Piping Systems."

NAME _____ TITLE _____ COMPANY _____ ADDRESS _____ CITY _____ ZONE _____ STATE _____

When inquiring check CP 6523 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Designed for PROTECTION



Styles illustrated
\$8-20 Jacket
\$1-05 Pants
\$1-15 Hat

Sawyer's "FROG"
BRAND
CLOTHING

can take it!

Tough — wears like iron, takes endless snagging, scraping, chafing and still gives full protection.

Rotproof — not affected by oils or chemicals — will not blister, crack or peel.

Waterproof — made with top quality base fabric, first saturation-coated, then coated on the inside as well as on the outside with specially blended Neoprene Latex.

Many styles — in black, yellow or Hunter's green
Write for catalog

THE H. M. SAWYER & SON CO.
Cambridge, Mass.

When inquiring check CP 6524
on handy form, pgs. 2-3

SAFETY

**Extinguisher tips while wheeled
to provide necessary
mixing of chemical . . .**

unit is 90 pounds lighter and slightly smaller than previous model of same capacity

Uses: Fire extinguishing unit for use against flammable liquid, gas and electrical fires, as well as surface fires involving ordinary combustible materials. It has been granted unconditional B and C rating by Underwriters' Laboratories.

Features: Extinguisher is partially inverted for wheeling and then fully inverted at fire scene — thus changing the position of the dry chemical in the tank and providing mechanical breakage. This feature plus a continuous nitrogen-pressured agitation or fluffing makes for a more effective and complete discharge.

Description: Unit is designated by manufacturer as the C-O-Two 150-Pound Size Dry Chemical Type Wheeled Portable Fire Extinguisher. It is 90 pounds

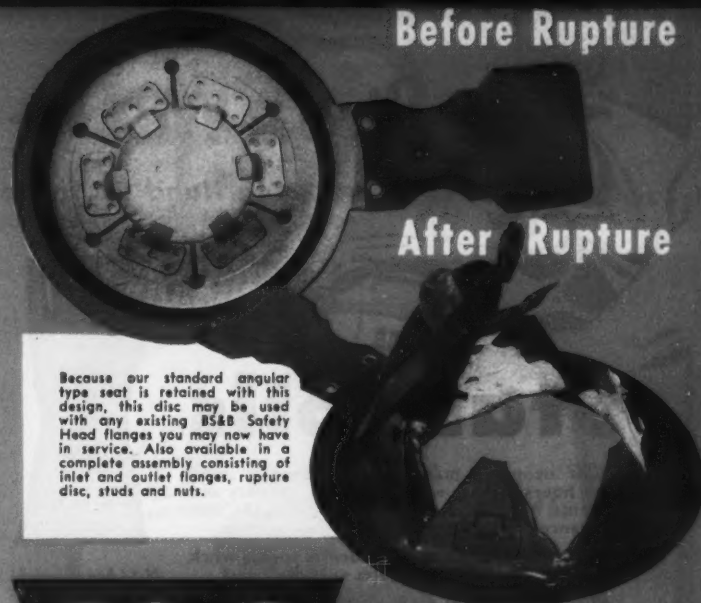


90 pounds lighter than predecessor

lighter in weight than previous model and slightly smaller in over-all dimensions. No special tools are required to recharge the unit at the scene of a fire, as the dry chemical used is available in 50-pound size moisture-proof containers.

(Available from C-O-Two Fire Equipment Co., Dept. CP, P.O. Box 390, U.S. Highway 1, Newark 1, N. J. . . or for more information concerning manufacturer's product, reader may simply check CP 6525 on the convenient Reader Service slip located between pages two and three.)

For more information on product advertised at right, specify CP 6526 . . . see information request blank between pages 2 and 3.



Because our standard angular type seat is retained with this design, this disc may be used with any existing BS&B Safety Head flanges you may now have in service. Also available in a complete assembly consisting of inlet and outlet flanges, rupture disc, studs and nuts.

BS&B

Announces

A NEW DESIGN OF SAFETY HEAD RUPTURE DISC FOR LOW PRESSURE APPLICATIONS MODELS 1A AND 1B

Here is a new BS&B Safety Head rupture disc especially developed for low pressure applications of a type which, because of extreme corrosive conditions, cannot be handled by our standard pre-bulged type of disc.

As you know, the BS&B Safety Head is a patented pressure relief device that is designed to become an integral part of any pressured system containing air, gas or liquid—either bland or corrosive. Disc Models 1A and 1B are constructed of corrosion resistant metals such as Inconel, stainless steel, nickel, Hastelloy B and Monel, using a sealing membrane of Teflon or Kel-F. Either model is available in 2", 3", 4", 6", 8"

and 10" sizes. Pressure ratings range from 8 to 100 lbs. Close design tolerances are an inherent feature of this type of disc.

Our knowledge attained by years of experience in the rupture disc field, combined with continuing research, development and a wide selection of controlled ductile metals has again enabled BS&B to provide industry with a time-proven product.

If you have a pressure relief problem which you have not been able to solve satisfactorily with the pre-bulged type of disc or other types of relief devices, we suggest that you investigate the BS&B Model 1A or 1B disc.

Your BS&B Man will be glad to give you details...or you may write for descriptive literature and prices.

BS&B
Safety Heads



THE "CIRCUIT BREAKER" OF Any Pressured System

BLACK, SIVALL & BRYSON, INC.
Safety Head Division, Dept. 2-M2
7500 East 12th St., Kansas City 26, Mo.





Stop a Wildcat!

Extra Tough Hand Protection



Stanzoils®

Milled neoprene makes tough Stanzoils stand extra hours contact with oils, acids, caustics and Solvents. Milled neoprene has higher tensile, tear resistance than any other oil resistant rubber.

Super-Safe grip creates confidence, speeds work—handles wet slippery objects as if dry.

Only a liquid-tight glove gives positive physical protection from conditions that cause dermatitis.

32 PIONEER styles, weights, sizes and colors. Stanzoil catalog quickly shows how to pick best, most economical glove for each job. Write for it today!


The **PIONEER** Rubber Company 241 Tiffin Road Willard, Ohio

Quality Gloves for 35 Years



When inquiring check CP 6527 on handy form, pgs. 2-3

Approved by Safety Engineers...



HAWS EYE-WASH FOUNTAINS



...offer a way to more adequately protect employees' eyesight and avoid costly insurance claims... by providing a safe method for workers to flush injurious chemicals and particles from their own eyes immediately—before greater damage can be done!

And, wherever there is danger of workers' hands, face or clothing being contaminated by acids or caustic chemicals—install HAWS Emergency Drench Shower Equipment.

Cost is negligible. Ask your plumbing contractor, or write today for complete information.



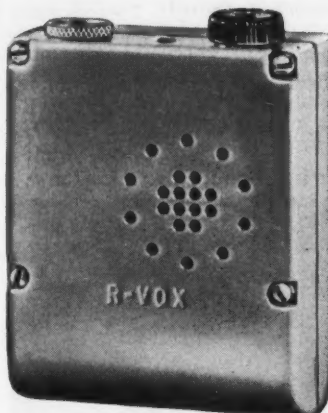
HAWS DRINKING FAUCET CO.
1439 FOURTH STREET • BERKELEY 10, CALIFORNIA

When inquiring check CP 6528 on handy form, pgs. 2-3

SAFETY

Belt-buckle-size unit gives radiation alarm

Personnel safety radiation unit gives off audible alarm informing user when over-dose of radiation has been received. Instrument was developed in conjunction with Oak Ridge National Laboratories for use in all laboratories where gamma radiation exists.



Squawks at over-dose of radiation

Unit weighs nine ounces and may be belt-carried or used as an area monitor. Size is 4 x 3 x 1½". Standard range is 100 milliroentgens. Unit is automatically in operation when turned face-up or to a vertical position. Exposure and instrument operation may be checked at any time during use without loss of accumulated dose.

(R-VOX is a product of Dept. PF-10, Radiation Counter Laboratories, Inc., Dept. CP, 5122 W. Grove St., Skokie, Ill. . . or for information check CP 6529 on handy form, pages 2 and 3.)

Ladder rolls easily — when empty . . .

stepping on it brings rubber feet in contact with floor

Uses: Line of ladders is available in various sizes for maintenance work, selecting stock, and other common climbing jobs.

Features: Casters allow ladders to be rolled easily along floor. Weight of anyone on ladder, however, brings rubber feet in contact with floor providing a firm base.



ELECTRO SNAP

ONE WAY IMPULSE SWITCH

FOR SIMPLIFIED CONTROL

EXCLUSIVE ACTUATOR LETS YOU DO THINGS YOU NEVER COULD BEFORE!

- Eliminates Interlocking Switches and Complicated Actuating Dogs—Ideal for pulsing solenoid valves, air-hydraulic cylinders.
- Gives More Dependable Operation—Replaces complicated controls.
- Lowers Cost of Controls Circuits—Fewer switches, etc., required.
- Faster Automatic Operation—Closer sequencing possible.

Switch rated at 10 amps, 125/250 v. AC. Four models available with over-travel and pulsing strokes from 1/16" to ¾". Write for Data Sheet ESM-2.

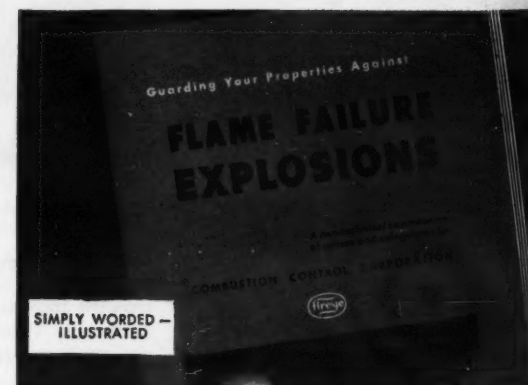
Model ESM-2

SEE OUR CATALOG IN PRODUCT DESIGN FILE or write for copy

ELECTRO-SNAP SWITCH AND MFG. CO.
4224 West Lake Street, Chicago 24, Illinois

When inquiring check CP 6530 on handy form, pgs. 2-3

FREE! New Safety Information Process Engineers Need!



IF YOU BURN oil, gas, powdered coal or other fuel, for power, processing or heating, the chances are 4-out-of-5 that you do not have complete safeguards against burner flame-failure explosions. Why take chances . . . ? This new booklet gives you all the information you need to prevent

flame-failure explosions. With it you can spot burner explosion hazards in your plant—identify obsolete or inadequate "protective" devices—determine your needs for the most modern safeguard equipment. Get your copy, free! Please give your company name and title.

WRITE:

COMBUSTION CONTROL CORPORATION
Dept. MB-2, 718 Beacon Street
Boston 15, Mass.



When inquiring check CP 6531 on handy form, pgs. 2-3

CHEMICAL PROCESSING

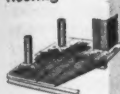
USE THIS NEW SAFETY MATERIAL

ALL OVER
YOUR
PLANT

Work platforms



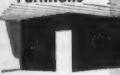
Flooring



Outer Covers



Partitions



Safety

GRIP-STRUT

NON-SKID—RUGGED—LOW COST

Safety Grip-Strut is a new basic material. All one piece, steel or aluminum, in various sizes and gauges. Sold like lumber, used like lumber and stocked in your storeroom like lumber. Ideal for on-the-job fabricating. Not welded, riveted or expanded. It presents an open space, in a diamond shaped pattern, in excess of 75% of the area for ready access of light and air and gives a positive NON-SKID footing in all directions. Ideal for stair treads, fire escapes, cable trays, work platforms, catwalks, flooring and for original equipment safety treads. Your own mechanics can install it—it's inexpensive, yet permanent and safe.

Write today for new catalog showing loadings and methods of easy application in your plant.

Distributors in all principal cities.

GRIP-STRUT division

THE GLOBE COMPANY

Manufacturers since 1914

4006 S. Princeton Ave. • Chicago 9, Ill.

When inquiring check CP 6532 on handy form, pgs. 2-3

**READ AIR
VELOCITIES**

WITH THE

Alnor
VELOMETER



it's fast

... you get instant, precise readings directly from scale face ... no need for reference charts or calculations. Measure air flow through ducts, grilles, motors, spray booths, etc., or in the open.

it's accurate

... brings laboratory standards of air velocity measurement to the production line, mine, mill ... anywhere. Needs no special care or handling ... anyone can use it and get accurate results.

it's portable

... completely self-contained, hand-held. Rugged construction and sturdy case protect the Velometer from usual hazards of portable use. Available in scale ranges to 24,000 f.p.m. Wide selection of jets and fittings assures adaptability of Alnor Velometer to your application. Get full details and prices, write for Bulletin 2448-G. Illinois Testing Laboratories, Inc., Rm. 504, 420 N. La Salle St., Chicago 10, Ill.

Alnor

**PRECISION INSTRUMENTS
FOR EVERY INDUSTRY**

When inquiring check CP 6533 on handy form, pgs. 2-3

SAFETY

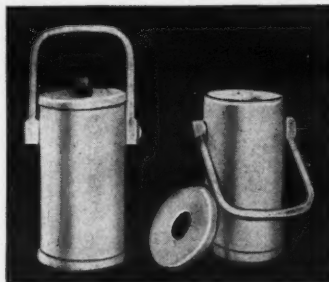
Description: All steel safety step ladders have aluminum finish. Frames are of $\frac{3}{4}$ " steel tubing. Reinforced expanded steel is used in non-slip step plates. Larger units (four and six step models) are furnished with handrails. Optional feature on these larger ladders is a detachable wire mesh basket, 12 x 15 x 8".

Ordinarily free rolling casters support empty ladder, allow it to be rolled easily. These, however, are "disengaged" by weight of anyone climbing the ladder. While weight is on ladder, rubber feet hold it in place.

("Automatic Action" Safety Ladders are manufactured by Precision Equipment Co., Dept. CP, 3714 N. Milwaukee Ave., Chicago 41, Ill. . . . or for more information on manufacturer's product, reader may simply check CP 6534 on handy form located between pages two and three.)

Bottle handling made safer

Handling and carrying of large bottles containing concentrated acids is made less hazardous with use of bottle carriers. Made of corrosion resistant polyethylene,



For transporting acids

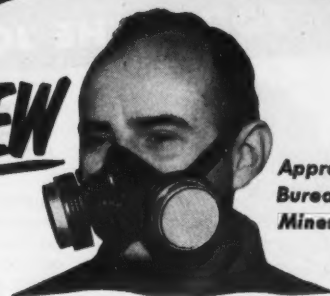
they are light in weight, have a bail type handle and are almost unbreakable. Sung fitting cover holds bottle safely in position, even when tilted for pouring.

(Agilene Bottle Carriers are produced by American Agile Corp., Dept. CP, P.O. Box 168, Bedford, Ohio . . . or for more information reader may simply check CP 6535 on handy Reader Service slip located between pages two and three.)

CESCO

**RIGHT...
before your Eyes!**

NEW



Approved by
Bureau of
Mines

Organic Vapor Respirator No. 99

• Here's a brand new twin cartridge respirator that fits perfectly. The facepiece is contoured to provide snug, comfortable, leakproof fit without excessive tension of the adjustable dual headbands.

• Positive acting inhale-exhale check valves prevent rebreathing or exhausting through cartridges. Valves are replaced without tools. Two 85cc absorbent cartridges provide ample breathing efficiency. They are easily and quickly replaced by unscrewing retaining caps.

• The CESCO No. 99 Respirator is covered by Bureau of Mines approval No. 2307 for organic vapors not exceeding 1/10 of 1% by volume.

Converts to Dust Respirator No. 96

• By simply replacing the vapor cartridges with CESCO filter pads, the No. 99 Respirator is converted to the No. 96 CESCO Dust Respirator. Filters are treated wool-felt with no outside screens or covers. The entire frontal surface of the filter is usable providing maximum efficiency and little resistance to breathing.

• The No. 96 Respirator is covered by Bureau of Mines approval No. 2167 for all dusts not significantly more toxic than lead.

Dual Purpose Saves You Money

• The unique feature of quick conversion from organic vapor to dust respirator by merely changing the two cartridges or filter pads makes these highly efficient CESCO No. 99 and No. 96 approved Respirators very economical. You buy only one respirator and elements as desired. They save you money.

Send TODAY

for CESCO literature and the name of your
CESCO safety equipment distributor

CESCO



CHICAGO EYE SHIELD COMPANY • 2316 Warren Blvd. • Chicago 12, Ill.

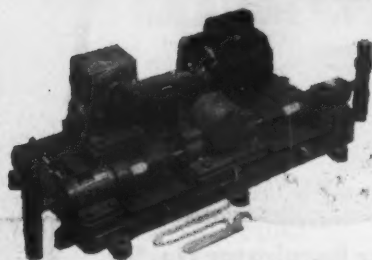
CESCO FOR SAFETY

OFFICES IN: Atlanta, Birmingham, Boston, Buffalo, Cincinnati, Cleveland, Columbus, Detroit, East Orange, Houston, Kansas City, Knoxville, Little Rock, Los Angeles, Mexico City, D. F., Milwaukee, Montreal, Philadelphia, Pittsburgh, Salt Lake City, San Francisco, Spokane, St. Louis, St. Paul, Toledo, Tulsa

When inquiring check CP 6536 on handy form, pgs. 2-3

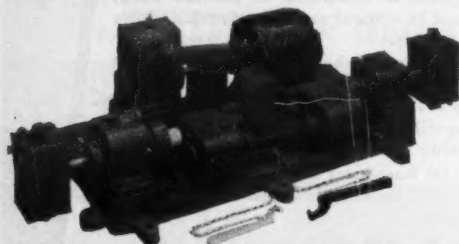
If you meter or proportion
small volume flows...

**THERE IS
A HILLS-McCANNA
"U" TYPE PUMP
TO DO THE JOB**



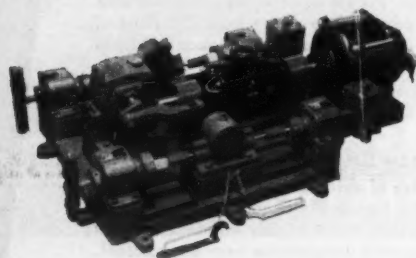
STANDARD 1, 2, 3 or 4 FEED UNITS

Standard "U" Pumps are available in maximum capacities from 0.10 to 24.0 gal. per hr. per feed. Operating pressures from 125 to 5000 psi.



JACKETED UNITS

For handling materials that require heat or refrigeration, "U" Pumps can be supplied with either or both jacketed liquid ends and check valves.



VARIABLE SPEED UNITS

"U" Pumps can be furnished with a variable speed drive which permits varying capacity remotely or automatically when combined with the proper auxiliary equipment.

Write for Catalog:

Catalog UP-52R gives full data on all sizes and types of Hills-McCanna "U" Type Pumps. Write for a copy, today. Hills-McCanna Co. 2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANNA

metering and proportioning pumps

Also Manufacturers of:
**SAUNDERS TYPE DIAPHRAGM VALVES
FORCE FEED LUBRICATORS • MAGNESIUM ALLOY SAND CASTINGS**

When inquiring check CP 6537 on handy form, pgs. 2-3

SAFETY

**Light-weight trouble lamp
explosion-proof for use
at hazardous spots...**

for inspecting interior areas
of oil, gasoline tanks

Lamp consists of a cast aluminum cylindrical-shaped lamp chamber, concentrating lens, composition handle, support hook, and explosion-proof cord connector with mechanical cord grip. Strong



For use around explosive vapors
and gases

beam of light concentrated by the lens is supplied by 12 v auto lamp. Current is supplied by explosion-proof 120/12 v transformer.

(EPLH Lamp is a product of Crouse-Hinds Co., Dept. CP, 7th North St., Syracuse, N. Y. . . . or for more information check CP 6538 on handy form, pages 2 and 3.)

Slipping hazard reduced with safety rubber

Intended for use in gas stations, oil refineries, chemical plants, and paper mills, neoprene rubber is light (9 oz) and tough. Rubber is molded in one piece, has no fabric lining, and possesses great stretchability allowing three sizes to fit virtually all shoes. Squeegee action of concentric suction cups prevents slipping.

(Tri-Vac Safety Rubber is a product of Tingley Rubber Corp., Dept. CP, 903 Ross St., Rahway, N. J. . . . or for more information check CP 6539, pages 2 and 3.)

*Two Ways To Provide
Long-Life Insurance
for Your Plant and
Equipment...*



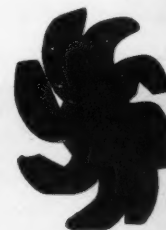
In the Coatings and Linings briefly described below, GOODALL offers two proven methods of assuring prolonged service life for metal products, parts and equipment, by protecting them from the deteriorating effects of corrosion, abrasion and weather.

"Allgood" Maintenance Coatings

The ideal way to protect the plant and its equipment from the effects of weather, corrosion and other destructive agents. With no greater time or effort than required to apply ordinary paint, "Allgood" Maintenance Coatings can be brushed or sprayed-on to give a tough, durable covering that will pay for itself over and over again through savings in maintenance and replacement costs. Equally effective on metal, wood and concrete. Made in several different formulas to meet specific conditions. Available in quart and gallon cans from headquarters at Trenton, N. J., or any of our branches listed below.

"Rubberhide" Linings

These are rubber, neoprene or other compounds processed to the inner or outer surfaces of metal parts and products, of virtually any size or shape, to provide long-lasting protection against corrosion and abrasion, or to prevent contamination of many costly solutions during manufacture, storage or distribution.



"Rubberhide" Linings are applied promptly to units shipped to our processing plants in Trenton, Chicago and Houston. Where the units are too large for practical or economical shipment, or are permanently installed, the Linings are applied by trained field crews. We can also furnish pipe, fittings and valves; tanks, fume ducts and other fabricated equipment with "Rubberhide" Linings applied.



Contact our nearest branch for complete information on "Allgood" Maintenance Coatings and "Rubberhide" Linings; or submit details of the equipment to be protected, for our recommendations.



GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches: Philadelphia • New York • Boston • Pittsburgh • Indianapolis • Chicago • Detroit • St. Paul
Los Angeles • San Francisco • Seattle • Spokane • Portland • Salt Lake City • Denver
Houston • Goodall Rubber Company of Canada, Ltd., Toronto • Distributors in Other Principal Cities

When inquiring check CP 6540 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Application prospects bright for heat sensitive cable . . .

present production scheduled for aircraft use; industrially available perhaps in 1954

Recent research has led to the development of a heat sensitive cable whose future prospects for application and usage appear particularly bright. The work was done by Thomas A. Edison, Inc. as part of its continuing research program in aircraft fire detection. Special emphasis was directed to phenomena which could be practically utilized to obtain maximum effective coverage of aircraft zones susceptible to fire hazards.

After much fundamental research, the program was concentrated on developing a semiconductor type of fire detection device. Advantages of this type of heat sensing element as brought out by the research program are:

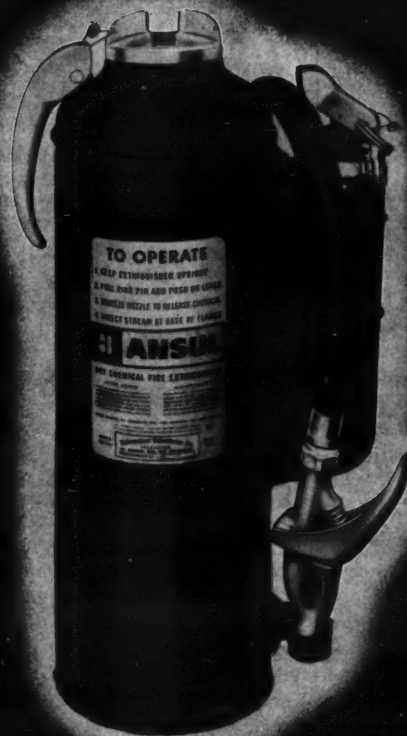
- 1) Possibility of having a sensing device that is an insulator at normal temperature and becomes a very low impedance device at a predetermined temperature so as to energize a signal device with no amplification — hence no electronic tubes are necessary.
- 2) Because of (1) under no alarm conditions, the current drain for the system need be effected only in the order of a few milliamperes or less.
- 3) The possibility of forming a filamentary continuous cable having uniform heat sensitivity throughout its length and characterized by a high negative temperature coefficient of resistivity, which effects a high degree of safety from false alarm and yet maintains sensitivity in the device.
- 4) High protective coverage with low weight per installation.
- 5) Immunity to aircraft environmental conditions such as high vibratory forces and high ambient temperatures.
- 6) Because of low impedance operating alarm point, moisture, salt spray and carbon oil films will not false alarm this device.
- 7) Low thermal mass acts to promote rapid response time.
- 8) Simple construction, rugged, foolproof.
- 9) Ability to operate after repeated immersions in a 2000°F flame.

It is reported that the semiconductor finally developed is of such stable nature both chemically and thermally that even relatively large amounts of impurities and exposures to extreme temperatures provoke no serious change in the calibrated resistance value.

At the present time all production will be scheduled for aircraft use, and it is not anticipated that it will be made available for industrial applications until some time in 1954.

(Information for the above article was developed from research directed by Thomas A. Edison, Incorporated, Instrument Division, West Orange, New Jersey.)

FASTER MORE EFFECTIVE... MORE DEPENDABLE FIRE-STOPPING POWER



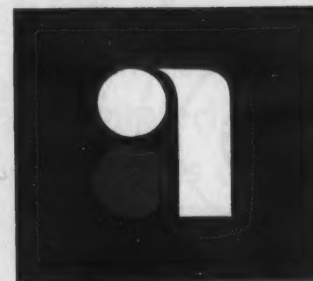
MODEL 20-B



ANSUL

Chemical Company

FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN



ANSUL FIRE EXTINGUISHING EQUIPMENT

FASTER . . . A short, quick downward motion of the puncture lever pressurizes the extinguisher and it is ready for instant use.

MORE EFFECTIVE . . . Even the inexperienced operator gets near-expert results because of the ease of operation and handling. In addition ANSUL "PLUS-FIFTY" Dry Chemical has greater fire-killing power.

MORE DEPENDABLE . . . Exclusive ANSUL-ENGINEERED design features include water-tight and corrosion-resistant construction, easy, on-the-spot recharge without special tools and other exclusive Ansul developments which insure greater dependability.

FIRE-STOPPING POWER . . . ANSUL FIRE EXTINGUISHERS have the highest ratings for fire-stopping power ever awarded any type of class B and C fire extinguishing equipment.

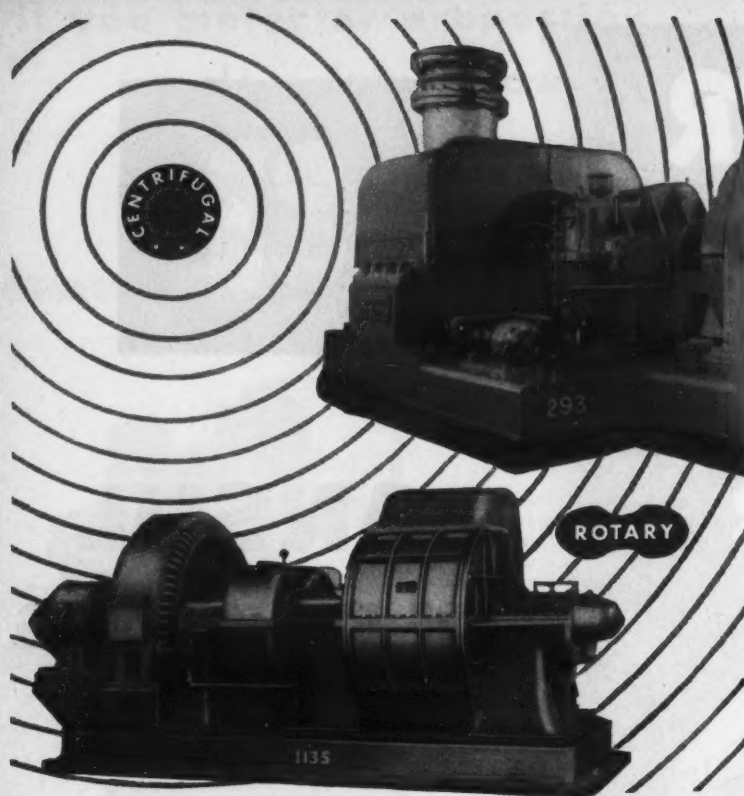


Send for File No. B-203. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES IN THE U. S. A., CANADA AND OTHER COUNTRIES

MANUFACTURERS OF DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT, REFRIGERATION PRODUCTS, INDUSTRIAL AND FINE CHEMICALS AND LIQUEFIED GASES

When inquiring check CP 6541 on handy form, pgs. 2-3



ONLY THE BLOWER *Specialists* BUILD THE DUAL-ABILITY LINE

To meet the varying problems of handling air or gas, in industrial processes, Roots-Connersville builds two complete lines of blowers and exhausters—Rotary Positive and Centrifugal. Together, they cover capacity requirements from 5 cfm to 100,000 cfm in single units. Centrifugals are available in multi-stage units, as illustrated, or in single-stage types.

Thus, this exclusive *dual-ability line* permits selection (without prejudice as to types) to meet the needs of most moderate pressure applications. Regardless of their sizes or types, R-C Blowers are unmatched in reliability, operating economy and long-time performance. Built into them is almost a century of specialized experience in handling gas and air, which is our exclusive business.

In addition to blowers and exhausters, R-C products include a wide range of gas and vacuum pumps, meters, inert gas generators and other related equipment. So, whenever you have a need for moving or measuring gas or air, we suggest consultation with the R-C Specialists.

ROOTS-CONNERSVILLE

*Exclusive
Specialists
in Handling
Gas and Air*



ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.
936 Richland Ave. • Connersville, Indiana

When inquiring check CP 6542 on handy form, pgs. 2-3

SAFETY

Provides safeguard against fires

Uses: For oil, gasoline, paint, and all electrical fires. Also, for control of incipient wood, paper, rubbish and all other Class A fires.

Features: One-piece seamless brass shell is resistant to solvents, humidity, corrosion and has burst pressure up to 1300 psi, depending on unit's size.

Description: Dry chemical fire extinguisher is charged with non-caking powder and pressurized at 150 and 200 psi with nitrogen. One-hand squeeze grip, and a



Has one-hand squeeze grip

lever locking cam that is released quickly, make unit ready for instant use.

Approved by Underwriters' Laboratories, Inc., extinguishers are supplied in 3, 4, 5, 10, 20, and 30 lb capacities.

("Redi-Flo" Mark II dry chemical fire extinguishers are a product of Stop-Fire, Inc., Dept. CP, 125 Ashland Place, Brooklyn, N. Y. . . . or for more information on this item simply check CP 6543 on the convenient Reader Service slip located between pages two and three.)



Edmont Case No. 329: Cleaning and acid-etching fabricated cab sections for cranes and shovels, prior to painting. A hazardous operation with ordinary unlined gloves because of the sharp metal edges. Edmont No. 922 gauntlets have been

safely used for years. Their NEOX (reinforced neoprene) coating resists cuts and snags as well as etching acid; their flannel lining prevents skin irritations. For further economy, right and left hand gloves are individually replaced when worn out.

On big power shovels . . .

Preparing metal for paint is no problem, with job-fitted gloves

If you bought a big power shovel or mobile crane, to work outdoors in every kind of weather, you'd want it to have one of the best protective paint jobs money could buy.

To provide that kind of paint job on its famous "Lorain" cranes and shovels, The Thew Shovel Company pre-treats its fabricated sections with acid, which insures a strong bond for the paint.

The problem of handling the sharp-edged sheets and plates in the acid, 8 hours a day, without hand injuries or skin irritations, is no problem at all. For years, Thew's safety and cost-conscious management has standardized on *job-fitted* Edmont gloves. The glove used on this operation is coated with cut-resistant, acid-proof NEOX. It has a good grip, is flexible and comfortable to wear. As always, this job-fitted glove has minimized costs through longer wear, safer work handling, and resulting employee satisfaction.



NEOX, natural rubber and plastic coatings

Over-all coated or palm coated - 34 types

Free Test Offer: We are interested in helping you fit the correct gloves to your jobs. Send a brief description, on your business letterhead, of your operation, materials handled and temperature conditions. Without cost we will recommend and forward samples of gloves, for job-testing. Our laboratory also develops special gloves for conditions which our 34 standard types do not meet.

Edmont Manufacturing Co., 1204 Walnut Street, Coshocton, Ohio
World's largest maker of coated industrial gloves, available through all leading industrial suppliers.



Edmont job-fitted gloves

When inquiring check CP 6544 on handy form, pgs. 2-3

CHEMICAL PROCESSING

SAFETY

Auxiliary lighting unit provides 10,000 sq ft of illumination

Uses: For factories, office buildings, warehouses, hospitals, and other locations where emergency lighting is required.

Features: Under normal circumstances, battery is kept fully charged from normal AC supply by means of built-in trickle charger. In AC power failure, electrically actuated relay automatically closes to provide emergency lighting. When normal power is restored, relay turns off floodlights and charging is automatically resumed.

Description: Lighting unit is furnished with one 25 watt sealed-beam lamp, but is also available with two if desired. Lamps are adjustable to pro-



Charges at trickle or high rate

vide light in any direction. Each lamp will illuminate up to 10,000 sq ft. In power failure, one-lamp unit furnishes eight hours of light, two-lamp unit approximately three hours. Neon pilot light indicates when unit is ready for emergency lighting service.

(Lightguard model M is product of Electric Storage Battery Co., Dept. CP, 1945 Allegheny Ave., Philadelphia 32, Pa. . . or for more information check CP 6545 on handy form, pages 2 and 3.)

Ketones — their vapor pressures and solvent powers — are detailed on pages 198 and 200

YOU CAN'T ALWAYS **STOP FIRE** BUT YOU CAN

● Here's about the cheapest kind of fire insurance you can buy. Install GREENWOOD Triple-Action Quick-Closing Valves on all lines and tanks handling volatile or combustible products . . . and get effective protection against fire — day and night, year after year. Fire melts fusible link, closing valve instantly. In emergency, valve may be closed manually by remote control or by pressure or failure of air . . . thus preventing the spread of fire.

GREENWOOD Triple-Action Quick-Closing Valves are regularly made of cast steel with stainless steel trim. For chemical, acid, or other special services these valves can be furnished in monel, stainless steel or other alloys with proper trim for the particular service. Available in 1", 2", 3", 4", 6" and 8" pipe sizes.

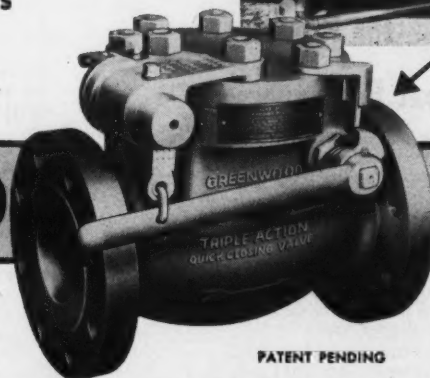
VALVE MAY BE CLOSED 3 WAYS

1. FIRE MELTS FUSIBLE LINK.
2. REMOTE MANUAL CABLE CONTROL.
3. APPLIED AIR PRESSURE OR AIR FAILURE.

GREENWOOD

GREENWOOD VALVE DIVISION
VERNON TOOL CO., LTD.
1101 Meridian Ave. P. O. Box 7555
Alhambra, Calif. Houston 7, Texas

When inquiring check CP 6546 on handy form, pgs. 2-3



PATENT PENDING

GREENWOOD Triple-Action Quick-Closing Valves in use on pressure storage tanks where highly volatile products are stored

TRIPLE-ACTION QUICK-CLOSING VALVE

Write for copy of Bulletin GV-3 showing the complete line of GREENWOOD Valves

Here's the answer to a TOUGH PUMPING PROBLEM

solved by AMERICAN-MARSH!

One processing firm has ordered and reordered this special Type Q-2 Vertical, Wet Pit, Centrifugal Sump Pump which *for them* solves a tough pumping problem . . . handling acids and caustics.

Specially designed for efficient pumping of small capacities at relatively high heads, its rugged construction makes misalignment impossible.

Chances are it may not solve *your* particular problem . . . but American-Marsh engineers can design a pump that will . . . or show you a standard model already built for your job.

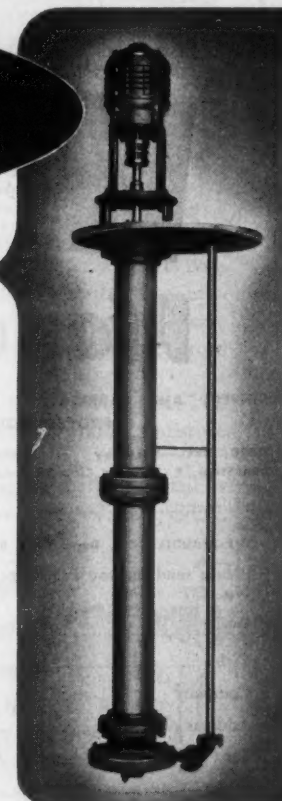
Tailoring the pump *solution* to the pumping *problem* is an American-Marsh tradition. Call us next time you have a pumping problem.

Pumps and Pumps Only Since 1873



WRITE TODAY FOR DATA ON PUMP TYPES THAT INTEREST YOU.

When inquiring check CP 6547 on handy form, pgs. 2-3



now



FLEXIBLE STANDARDS for Pfaudler

Stainless Steel Heat Exchangers

Design features previously associated only with custom-built heat exchangers are now available at competitive standard cost under Pfaudler's new system of flexible standards.

For a given heat transfer area, you may select the most applicable combination of length and diameter. Further, nozzles can be of any size and in any position and can be either threaded or flanged. **RAPID DELIVERY** — With our new production line methods, flexible standard units can be delivered in 4 to 8 weeks after receipt of your order.

COMPLETE LINE — The flexible standard program applies to fixed tube sheet, single or multi-pass, tube and/or shell side stainless steel units in diameters up to 10". In addition, Pfaudler heat exchangers are available with shell diameters from 4" to 24" in four basic types of construction . . . fixed tube sheet condenser, outside packed floating head design with removable tube bundle and shell, "U" tube construction with removable bundle.



GET THIS PFAUDLER DATA BOOK — This 40-page fact-packed heat exchanger manual contains all the data you need to work out capacity and type problems. Easy-to-follow tables, curves and charts. Full details on Pfaudler heat exchangers. Mail the coupon for your copy.

Pfaudler

ENGINEERS AND FABRICATORS OF CORROSION RESISTANT
PROCESS EQUIPMENT

GLASSED STEEL—Hastelloy • Aluminum • Tantalum • Teflon
Carbon Steel • Solid or Clad Stainless Steel • Nickel • Inconel •
Monel

THE PFAUDLER CO., Dept. CP-2, Rochester 3, N. Y.

Please send me the Pfaudler Heat Exchanger Manual
No. 837

Name

Title

Company

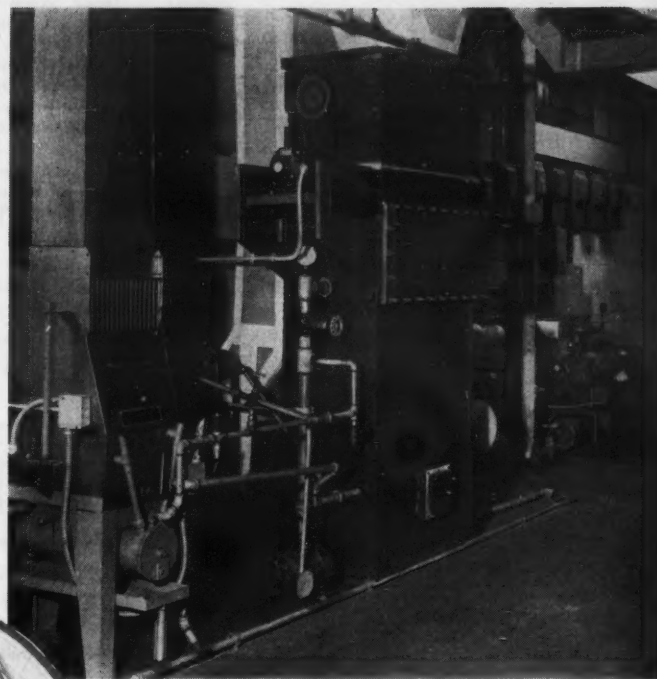
Address

City Zone State

When inquiring check CP 6548 on handy form, pgs. 2-3

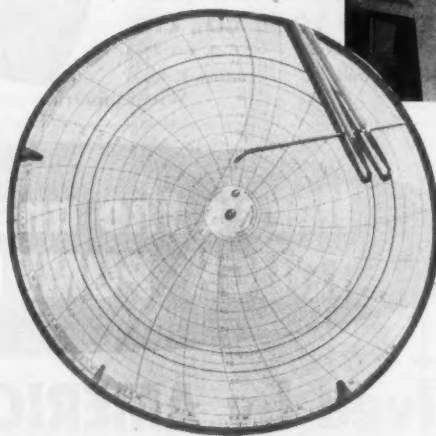
150

engineering
and maintenance



Concentrator, air conditioner,
and 5-ton compressor (left to
right) located in hall outside
of laboratory

Representative control sheet
shows how conditions are
being held constant in test lab



Lab's "climate" controlled for Sheaffer Pen's product tests



Interior of Sheaffer Pen laboratory

Air conditioning system delivers wide
range of temps, humidities for work
on ink, lead, pens, pencils

During the last quarter of 1952, W. A. Sheaffer Pen Company added a controlled temperature and humidity lab to its expanding plant and laboratory facilities in Fort Madison, Iowa. Pens, pencils, leads, and inks are tested in the small room before they are sent all over the world — to the arctic and tropic zones as well as to temperate climates. This pre-testing spots troubles which may develop later, and helps in the development of products to meet all climatic conditions.

Prime reason for planning the room originally was to have a means of duplicating conditions in dealer showcases. Temperatures average 140°F in the cases when the lights are on, but may fall to a

CHEMICAL PROCESSING

FEBRUARY

little above freezing when they are turned off for a weekend. Some of the items subjected to those conditions for prolonged periods were being affected and being returned for repair. Obviously, figured Sheaffer, it would be better to pre-test the products so trouble would be avoided.

The room has found other important uses, some of them unexpected. It permits control of evaporation rates in corrosion tests. Writing characteristics of various leads and papers in various climates can be predicted. Research is more easily conducted on such things as ink evaporation while writing in different climates, testing of colored inks, and determining effect of humidity on the fluorescing effects of fluorescent inks.

Dry bulb temperature can be controlled from 40 to 140°F, at an accuracy of plus or minus 1°F. Relative humidity can be controlled from 20 to 85%, at an accuracy of plus or minus 1%. (Higher humidities can be obtained by atomizing steam into the room.)

Ordinarily, icing of air conditioner coils would be a problem when operating at the point of minimum temperature and humidity, since the dew point under those conditions is minus 5°F. However, the air conditioning system being used avoids this difficulty by using a solution with a low freezing point instead of water as a saturating spray when these room conditions are employed. More about this later.

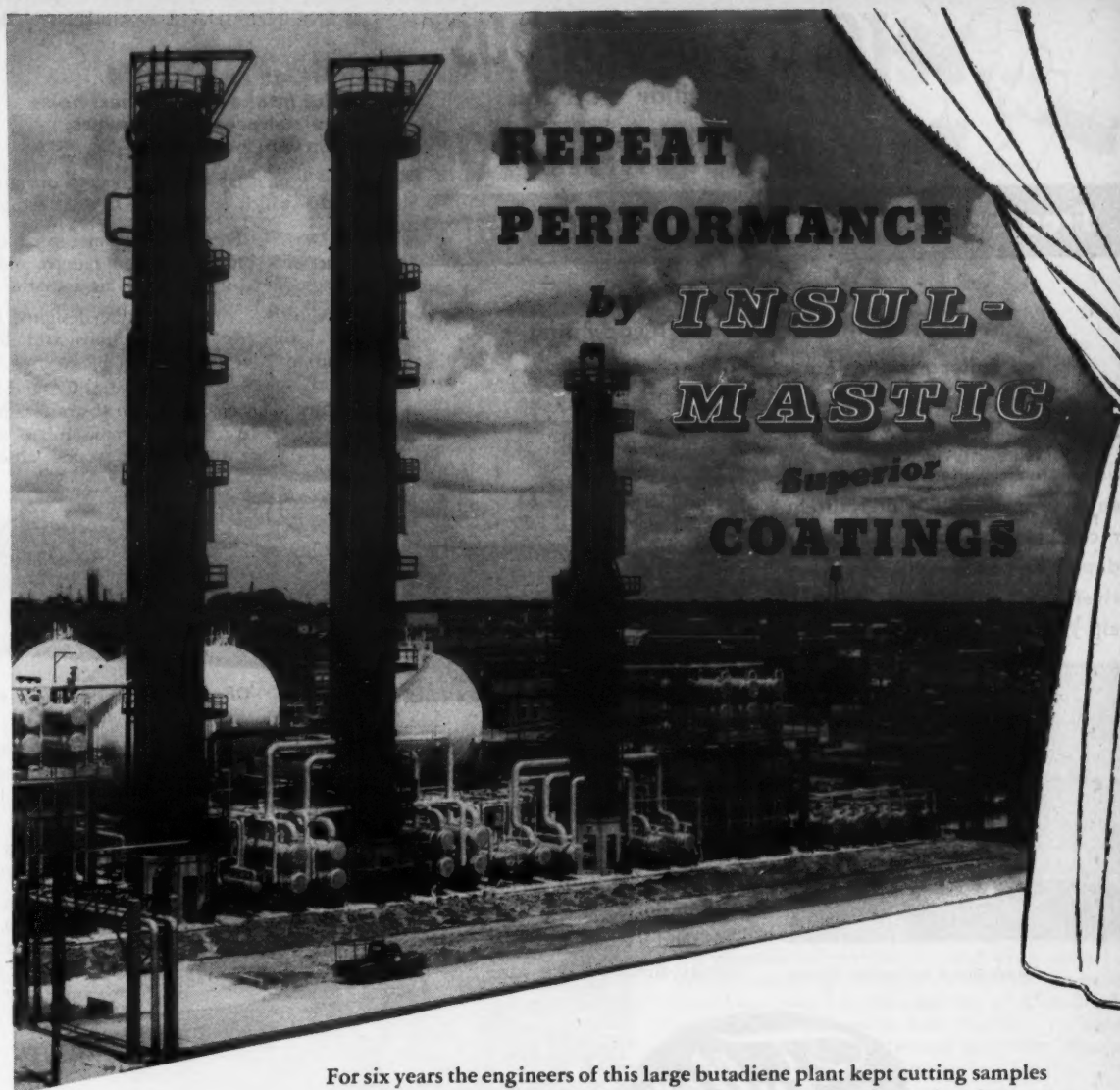
Conditioner handles 950 cfm of air from the room, plus 50 cfm of fresh air for pressurizing. Air is first saturated at the desired dew-point temperature by water spray. This temperature is obtained by Freon-refrigerated cooling coil in spray chamber. The saturated air then passes up through a reheat section where steam coils bring it up to the desired dry bulb temperature. Dew-point and dry bulb temperatures are under thermostatic control.

As mentioned above, a special solution (No-Frost) is substituted for water when dew-point temperatures are below the freezing point of water. Use of this liquid, similar to an anti-freeze which depresses water's freezing point, prevents icing on the conditioner coils.

Since the No-Frost liquid is used when low relative humidities are called for in the lab, the liquid is gradually diluted as it picks up water from the air coming in for conditioning. Hence, it must be reconcentrated at intervals. This is done by running it through a special unit called, aptly, the Concentrator. In this small piece of equipment, the liquid is heated and sprayed into a moving air stream at 130°F, so that moisture is evaporated.

Concentrator is put into operation automatically when liquid level in tank section of conditioner reaches a preset height. It operates continuously until enough water has been evaporated to bring level down to the preset minimum, at which time it stops operation.

(Type A air conditioner and Concentrator were supplied by Niagara Blower Company, Dept. CP, 405 Lexington Ave., New York 17, N. Y. . . . or check CP 6549, pgs. 2 & 3.)



Use **INSUL-MASTIC** Type "D" for insulation and corrosion up to 250°F. Our technical engineers are available to help you with this and other coating specifications.

Think *first* of the coatings that *last!*

For six years the engineers of this large butadiene plant kept cutting samples out of their INSUL-MASTIC coatings. They wanted to determine the condition of the metal or insulation underneath. What they found was so satisfactory that INSUL-MASTIC was specified when the three new towers above were built. It takes excellent results to command a repeat performance from such critics.

Protect your vessels, Vaporseal your insulation with INSUL-MASTIC coatings. For many long years they will halt weather, acids, alkalis, moisture vapor and other causes of corrosion.

What INSUL-MASTIC has done in the plant above has been repeated in hundreds of plants. Specify *proven* protection. Specify INSUL-MASTIC Superior coatings.

Insul-Mastic
CORPORATION OF AMERICA
Oliver Building • Pittsburgh 22, Pa.

Representatives in Principal Cities



When inquiring check CP 6550 on handy form, pgs. 2-3

TO THE INGENIOUS

Not familiar with this

NEW INDUSTRIAL TOOL

Free Sample of Fullergript Brush Strip

What problems can you solve by adapting Fullergript to your equipment?

This brush strip can be coiled or twisted into numerous shapes. It can be formed to give intermittent or continuous brushing action. It adapts to stationary or power driven applications. How it may help you is a matter of your own



Splash Guard on Vertical Grinder



Recovering 1000 Pounds of Raw Wool Each Week from Sewer

ingenuity — plus the services of the Fuller Brush Engineering Dept. Find out what Fullergript can do by sending for a sample strip. We will also send a booklet showing its versatility. Simply write us.



3656 MAIN STREET • HARTFORD 2, CONN.

Power driven brushes. Factory & Institutional cleaning tools, Waxes & Detergents

SIMPLY MAIL TODAY

THE FULLER BRUSH CO., INDUSTRIAL DIV.
3656 Main St., Hartford 2, Conn.

Please send me without cost or obligation a short strip of Fullergript — and tell me how it cuts costs when used as a machine component.

Name _____
Company _____ Title _____
Street _____ City _____ State _____

When inquiring check CP 6551 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

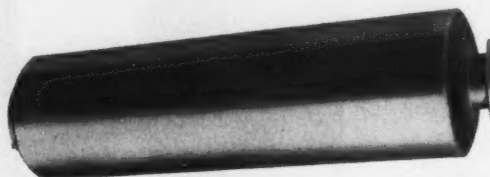
Cut intake and exhaust noise on compressors, blowers, vacuum pumps . . .

silencers are designed to operate in atmosphere which is moisture-free, at temps to 200°F

Uses: For quieting noise produced by air compressors, blowers, vacuum pumps, and other machines expelling high velocity air into the atmosphere.

Features: Silencers are designed for operation in moisture-free air conditions and for temperatures up to 200°F.

Description: Both series CA and LSA are absorption silencers employing straight-through, acoustically transparent perforated tubes surrounded by a deep layer of efficient, sound absorbing material.



Offer minimum restriction to air flow

This offers minimum restriction to air flow. Sound absorbing material can be used for operation at considerably higher temperatures than the standard of 200°F.

Series CA is available in pipe sizes up to 6", and Series LCA is available in sizes larger than 6".

(Intake-exhaust silencers are products of Burgess-Manning Co., Dept. CP, Libertyville, Ill. . . or for more information concerning manufacturer's product, reader may simply check CP 6552 on handy form located between pages two and three.)

Asbestos-cement pressure lines can be coupled at any temperature or under water . . .

assembly may be completed in trench or belling ahead method may be used

Uses: As a coupling for underground pressure lines of asbestos-cement pipe.

Features: Coupling assembly may be done under water, at any temperature, in the rain, or in mucky conditions. Pipe may be laid in deflected position when lines must be on a curve. Assembly may be completed entirely in trench or the belling ahead method may be used. This means mounting sleeve on one end of each length of pipe before lowering into trench.

Description: Sleeve of Ring-Tite coupling has two grooves cut circumferentially into inner wall. These grooves locate rings accurately and firmly and hold them in position.

To go with this sleeve, ends of pipe are specially machined to provide an entering taper back of

SPRAY NOZZLES

for chemical spraying, cooling, humidifying, dehydrating, and hundreds of other applications.

You'll get the right nozzles quicker by calling Binks... manufacturers of one of the most complete selections ever produced.

A wide range of spray patterns, sizes, capacities...with nozzles cast or machined from standard or special corrosion-resistant metals.

MAIL COUPON NOW!

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3120-32 Carroll Ave., Chicago 12, Ill.
O. K. Binks, send me your
Spray Nozzle Catalog...FREE!

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COMPANY _____
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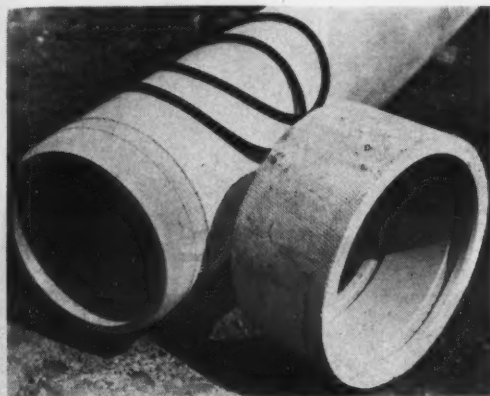
Binks
MANUFACTURING CO.

A COMPLETE LINE OF
INDUSTRIAL SPRAY NOZZLES
AND COOLING TOWERS

When inquiring check CP 6553 on handy form, pgs. 2-3

CHEMICAL PROCESSING

which is a two-step machined area. Taper makes it easier to insert pipe. Shoulder between two steps provides a stop which halts movement as pipe, rubber rings, and Transite sleeve slide together.



Cuts down installation time

When rubber rings contact stop shoulder, assembly is completed. Rings are equidistant on either side of joint. Space for expansion has been left between pipe ends. Lengths being joined have been brought into alignment. Rubber rings, locked firmly in their grooves, are tightly compressed between the sleeve and the pipe.

(Pipe coupling is a product of Johns-Manville, Dept. CP, 22 E. 40th St., New York 16, N. Y. . . . or for more information on manufacturer's product, reader may simply check CP 6554 on handy form located between pages two and three.)

Teflon base permits thread sealer to handle temps to 400°F yet remain chemically inert

Uses: For pipe thread sealing applications.

Features: Compound, with a base of pure Teflon (a product of duPont), forms a continuous film, preventing spiral wicking and leakage, and contamination of material being conveyed. It is suitable for metallic and plastic threaded connections in all types of process pipe lines and apparatus.

Description: Because of Teflon's non-adhesive characteristics, this compound seals leak-proof against fluids and gases under pressure, yet permits joints to be broken when necessary, eliminating galling and sheared threads.

Two consistencies of the compound, called Teffilm, are offered—light bodied for precision threads and viscous for manual application. Both are suitable for all chemicals to which Teflon is inert and for temperatures up to 400°F.

(Pipe thread sealer is a product of Eco Engineering Co., Dept. CP, 12 New York Ave., Newark, N. J. . . . or for more information reader may simply check CP 6555 on handy Reader Service slip located between pages two and three.)

Where bolted enclosures are a **MUST...** *Specify* **ALLEN-BRADLEY**



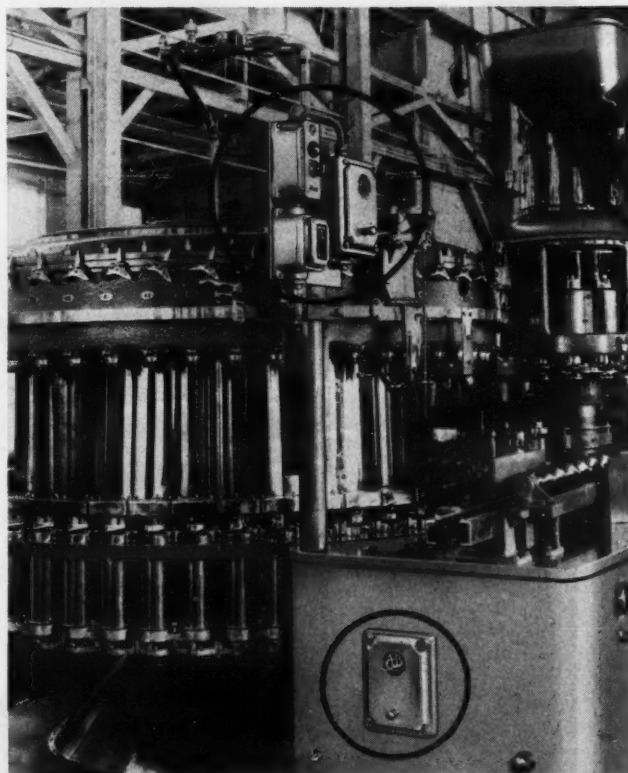
*The Sign of Quality
in Motor Control*

because

Allen-Bradley controls require no contact maintenance. The double break, silver alloy contacts never need filing, cleaning, or dressing. Nor is regular inspection necessary! The contacts are always in perfect operating condition.

Also, the simple solenoid design—only ONE moving part—is your reliable guarantee for millions of trouble free operations. When you eliminate moving or wearing parts like pins, pivots, linkages, and bearings, you automatically eliminate trouble.

... In moist or wet surroundings . . . time will prove that it's an economy to specify NEMA 4 Watertight Enclosures.



Dumore Bottle Filler operated with Allen-Bradley controls in NEMA 4 Watertight Enclosures.

Freedom from contact inspection and maintenance is, of course, desirable in any motor starter . . . but especially where the service requires enclosures with bolted covers. It is never easy to unbolt and handle heavy cast iron covers—even a minor amount of corrosion can add to the difficulty. That is why the average maintenance engineer favors Allen-Bradley trouble free controls. They know from experience that this entire line of starters, with their double break, silver alloy contacts, will operate for months . . . and even years . . . without requiring so much as contact inspection. They know also that the simplicity of Allen-Bradley starters means freedom from trouble . . . hence, your assurance of continuous operation. You win when you specify Allen-Bradley!

Allen-Bradley Co.
104 W. Greenfield Ave., Milwaukee 4, Wis.

ALLEN-BRADLEY TYPICAL BOLTED SAFETY ENCLOSURES



ALLEN-BRADLEY
SOLENOID MOTOR CONTROL
QUALITY

When inquiring check CP 6556 on handy form, pgs. 2-3

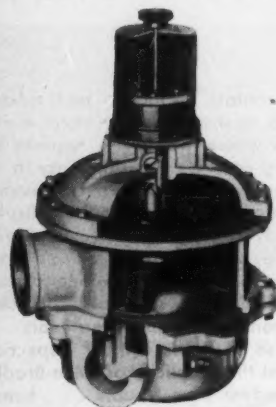
Electric controls and time clock on valve automatically govern water regeneration cycle . . .

design and operation principle cuts installation and maintenance costs

Uses: For automatic regeneration cycle control of commercial and industrial water softener, filter, and ion-exchange systems.

Features: Valve is regulated by automatic electrical controls and operated by a time clock. Entire regeneration cycle can be accomplished without supervision during off-work hours. Regeneration cycles can be precisely controlled, assuring longer life from treatment media. Because one valve handles entire system, installation costs are reduced. Design requires only one moving part in valve, thus cutting maintenance problems.

Description: Two-inch multi-port valve design provides porting changes through an electrical timer incorporating four adjustable cams which correspond to backwash, brine-injection, rinse, and service flow positions. Cams control a motor-operated pilot valve which changes pressure of water above rubber diaphragm in valve bonnet. Water pressure variations cause stem-plate assembly in valve to raise and lower — assembly meanwhile being indexed 90° with a barrel-type cam located at top of moving unit. Each 90° rotation provides a different porting arrangement to handle all four cycles of regeneration.



One valve handles entire system

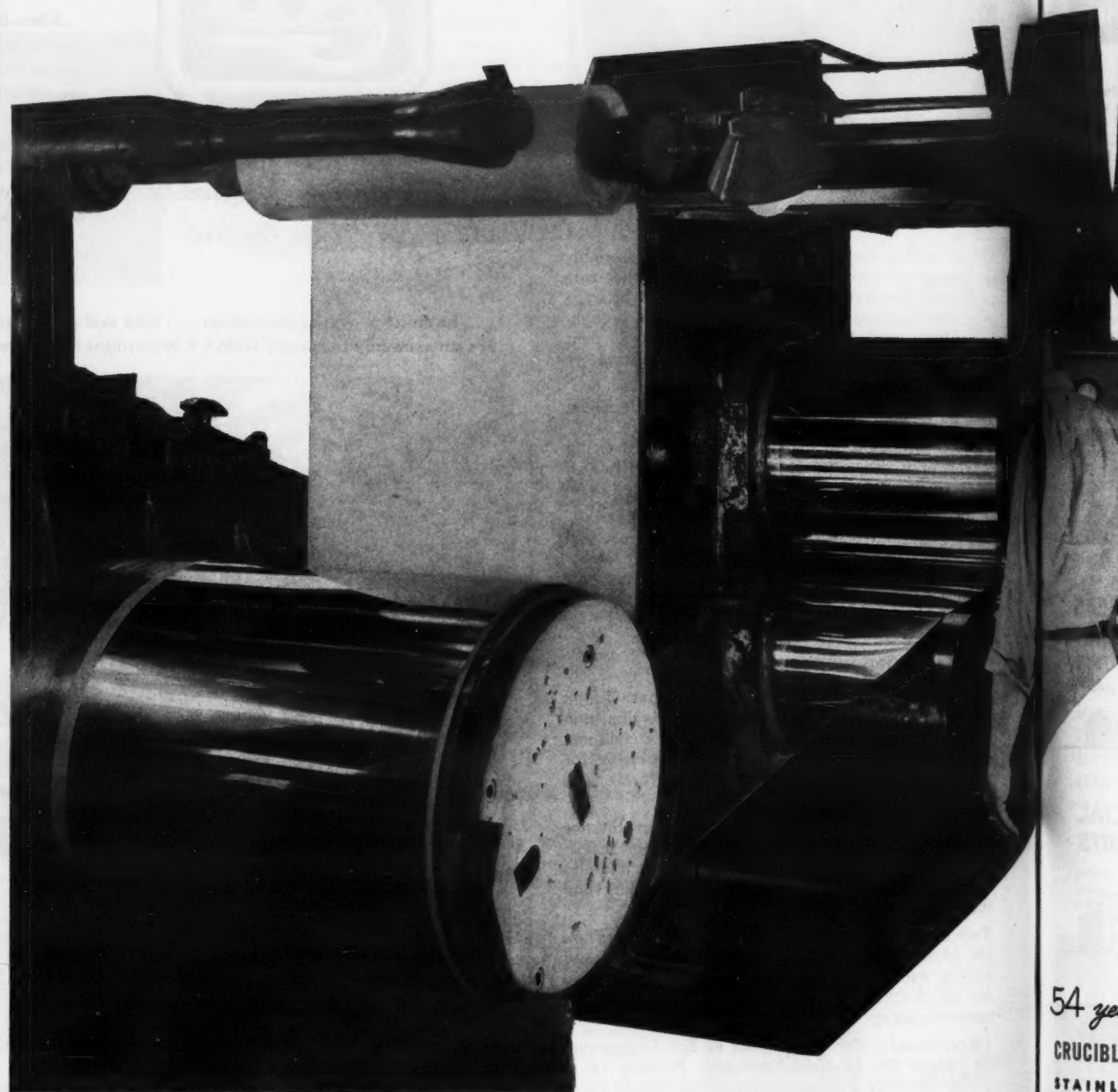
(Valve is a product of Automatic Pump & Softener Corp., Dept. CP, 2412 Grant Ave., Rockford, Ill. . . . or for more information check CP 6557 on handy form, pages 2 and 3.)

Aspirin, grinding wheels shaped on tabletting machines

Complete line of single punch and rotary tabletting presses used for conversion of powders and granular materials to solid compact shapes is described in 21-page bulletin. Particular attention is paid to details of mechanical design such as frames, shaft bearings, die tables, drives, hoppers, and feed mechanisms.

Cat 801 is issued by F. J. Stokes Machine Co., Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. When inquiring specify CP 6558 on handy form, pages 2 and 3.

STAINLESS A Specialty



ty
AT CRUCIBLE

Crucible's Midland Works



We treat stainless like a specialty steel. The same painstaking care required in melting and processing tool and other high-grade special purpose steels is taken in producing Crucible REZISTAL stainless steel.

But the real benefit to you is not just how we make stainless — important as that is. Rather it is the technical service we are prepared to render. Crucible pioneered in the development of stainless — designed and built a mill especially for stainless steel production. This background and the vast metallurgical experience we have gained in working out fabrication and application problems for all industries is at your service... to help you select the type that will give you the best performance at the lowest cost.

When you consider that stainless is a large group of steels, each with different strength and corrosion and heat resistant properties... and when you consider that the techniques for fabricating the more than 30 different grades of stainless differ, you'll be glad to consult expert advice.

A Crucible field representative is your pipeline to our invaluable technical resources. Why not call in one today?

CRUCIBLE

first name in special purpose steels

54 years of *Fine* steelmaking

STAINLESS STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

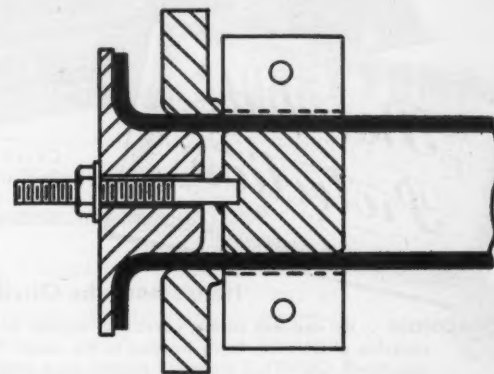
STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

When inquiring check CP 6559 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Effective flanging of plastic pipe possible with flaring tool

To be used with lap joint flanges (when connecting plastic pipe to tanks and flanged ends of metallic pipe), polyethylene pipe must have an integral flange. Although polyethylene can be easily worked after immersion in boiling water, such flanges are difficult to form with conventional tools. A flaring tool, similar to those used for flaring copper tubing, has been developed. It can easily and quickly form flanges on polyethylene pipe. Accompanying sketch shows assembly of tool.



Operation of tool is simple. Plug is inserted into tube and clamped. Then end of pipe is submerged in boiling water which softens it. Next, lap joint flange is slipped over pipe and flarer is placed on stud and screwed into pipe by means of a nut. Finally, the assembly is quenched in cold water and the tool removed. It is advisable to make up joint as soon as possible after forming ends, since polyethylene tends to resume its former shape after a period of time. A feature of this type of joint is that the flared polyethylene forms a natural gasket when joint is tightened.

(Information courtesy of E. I. du Pont de Nemours & Co., Inc., Dept. CP, Sabine River Works, P.O. Box 2027, Orange, Tex.)

Operating range of -30° to 350°F offered by multi-purpose lubricant

Manufacturer has recently announced a multi-purpose E.P. lubricant grease for highly-loaded ball and roller bearings and heavily-loaded sliding friction surfaces. Called Molykote Type BR2, compound is an oxidation-inhibited, lithium-base product, fortified with molybdenum disulfide powder. This grease has an operating range from -30°F to 350°F.

(Multi-purpose lubricant is a product of The Alpha Corp., Dept. CP, 179 Hamilton Ave., Greenwich, Conn. . . . or for more information check CP 6560 on convenient Reader Service slip located between pages 2 and 3.)

OLIVITE

Acid-Handling PUMP



Corrosion and leakage!
Two important questions
when considering chemical-
handling pumps.

Here's how the Olivite answers them:

CORROSION . . . the cast-iron casing, cover and impeller are protected by a heavy covering of OLIVITE, firmly bonded to the metal. It will not pull away or slough off. OLIVITE—a special rubber base plastic impervious to most chemicals, hot or cold, strong or weak. For special chemicals we have OLIVEX—a strong high tensile plastic of which the impeller is made for certain applications.

LEAKAGE . . . We employ three elements to prevent leakage and protect the shaft:
1) Floating Stuffing Box which constantly adjusts itself to the shaft;
2) Spring-Loaded Gland enabling the operator to easily keep the packing under proper pressure; 3) Removable Shaft sleeve which protects the shaft against corrosion as well as wear.

Even assuming that all acid-handling pumps have equal pumping efficiency—which they don't—your choice will focus on the pump that provides maximum protection against corrosion and leakage. At least, these two thoughts were important in the minds of a number of companies now operating 100 or more Olivites. Would you like to have us tell you more about these big Olivite installations?

Our OLIVITE Bulletin No. 308-R

In sending for your copy of this bulletin,
tell us about your pumping problem.

Olivite Sizes 1 1/4, 2 and 4 inch; Direct or V-belt drive.

NEW YORK 36-33 West 42nd Street • CHICAGO 1-221 North LaSalle Street
OAKLAND 1-2900 Glasscock Street • SAN FRANCISCO 11-260 California Street

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Dorr Oliver (India) Ltd., Bombay
SOUTH AFRICA
E. I. Soreman Pty., Ltd.
Johannesburg, Transvaal

When inquiring check CP 6561 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

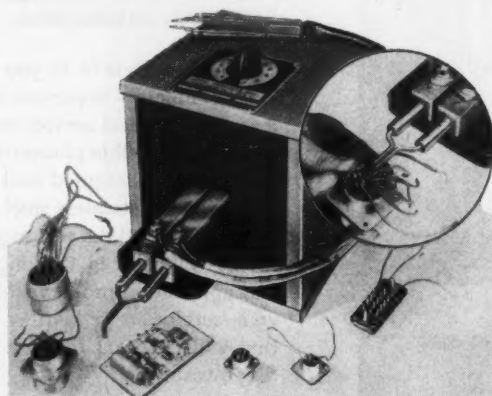
Around-the-clock soldering of small parts possible with tweezers . . .

fiberglass insulated electrodes can be shaped to
fit any operation

Uses: As an integral part of manufacturer's 250
W.—AN Connector soldering machine, for soldering
small parts on a production basis.

Features: Design furnishes good air cooling, per-
mitting operators to use tweezers around-the-clock.
They are fiberglass insulated, and electrodes can be
shaped to fit any operation.

Description: Electrodes are interchangeable and
can be replaced at low cost, according to manufac-
turer. Average life of electrodes under continuing
use is about three months. Under production con-
ditions it has been estimated that one machine with
one operator can turn out the work formerly pro-
duced by 2 1/2 girls with soldering irons.



Soldering machine equipped with tweezers (top) and
fixed electrodes

With fixed electrodes (inset in photo), operator sets
heat and solder, brings work to electrodes and presses
foot switch. Electrodes can reach into tiny areas
where a regular soldering iron cannot penetrate.

(Soldering tweezers and machine are products of
Joyal Products, Inc., Dept. CP, 115 Edison Pl., New-
ark 5, N. J. . . . or for more information check CP
6562 on handy form, pages 2 and 3.)

Flipped switch changes fuel from oil to natural gas in steam generator

Uses: For steam generating applications.

Features: Fuel-oil spray nozzle is incorporated into
metal body of gas burner. When fuel selection
switch is flipped from natural gas to oil, motorized
gas valve closes and fuel-oil solenoid valve opens,
releasing oil under pressure to spray nozzle. Fuel
oil is always ready to be released to combustion cham-
ber because it is continuously circulated through

Alloy Metals

Fabricated by Littleford
for the Chemical
Process Industries

The Fabrication of Alloy Metals re-
quires exacting, skillful workmen with
the skill to shear, form and weld each
metal with unerring precision. Little-
ford has fabricated such metals as
Stainless Steel, Monel, Everdur, Nickel,
Inconel, Herculoy and Aluminum into
hundreds of products used by the
Process Industries. Experience, plus
modern equipment and a definite re-
sponsibility for the quality of the fin-
ished product are assurance of the
finest workmanship. If you have a
problem involving Alloy Metals, send
your blueprints to Littleford for an
estimate of cost, or write for Bulletin
on Alloy Fabrication.



When inquiring check CP 6563
on handy form, pgs. 2-3

CHEMICAL PROCESSING

For 100% Effective REMOVAL and RECOVERY of DUST and DRY MATERIALS anywhere in your plant

HOFFMAN Industrial Pneumatic Cleaning Systems

Permanently piped, stationary systems that pick up where present collectors leave off! On process operations or plant cleaning, Hoffman-designed systems provide big capacity for central collection of dust from several areas at same time. Sizes from 3 to 100 H.P., or larger to your requirements. Engineering survey, without obligation. Write for technical Bulletin A-939.

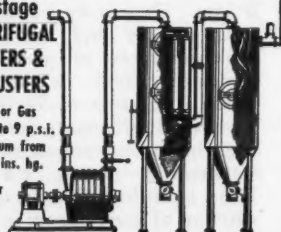
HOFFMAN ALSO BUILDS

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4 Sizes — Write for Bulletins

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BLOWERS &
EXHAUSTERS

For Air or Gas
from 1 to 9 p.s.i.
or Vacuum from
2 to 12 ins. hg.

Write for
Bulletin
A-932



Air Appliance Division

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MACHINERY CORP.

113 FOURTH AVE., NEW YORK 3, N.Y.

When inquiring check CP 6564
on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

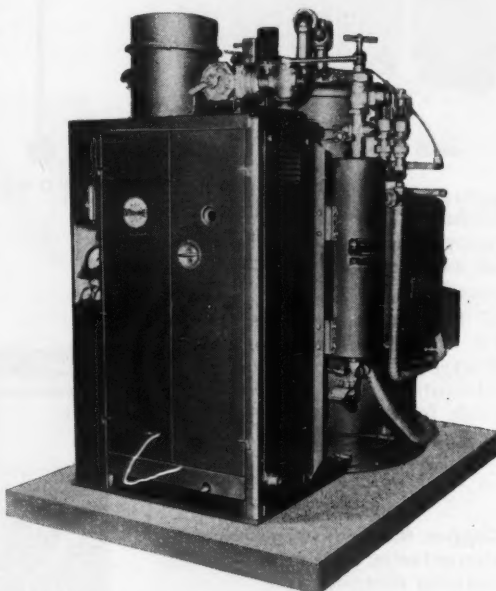
steam generator's hydraulic modulating controls. A constant spark and pilot light insure positive lighting.

Description: Steam generator, Model OKJ-4740, is said to develop full working steam pressure up to 300 lb in less than three minutes from cold water, and makes 1500 to 5000 lb of steam per hr. It is over 80% efficient.

Once started, by turning one switch, automatic controls take over and modulate steam output to meet changing demand. Steam pressure may be changed from 10 to 300 lb by turning on control.

Separator removes excess moisture and water treatment products from steam so that 99% dry, clean steam is directed through stop valve to steam line, according to manufacturer.

Unit is a complete package which includes 7½ hp electric motor, blower, feed water pump, steam separator, steel coils, and all controls, in a trim



Develops full working steam pressure up to 300 lb
in 3 min from cold water

cabinet. A fork truck can pick up this machine which weighs about 6000 lb and is about ¼ the size of a conventional boiler. No special building or walled-in area is necessary as these units cannot blow up because there is no reservoir of water heated under pressure.

By making electrical, steam, fuel, and water connections, unit is ready for operation. Overall dimensions are: width, 50 inches; height, 80 inches; length, 73 inches.

(Steam generator described in the above article is a product development of Department PR, Vapor Heating Corporation, Department CP, 80 East Jackson, Chicago 4, Illinois . . . for more information regarding this product check CP 6563 on the convenient Reader Service slip located between pages two and three.)



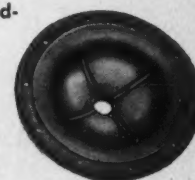
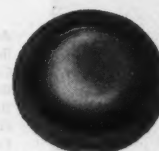
ODS Diaphragm SLURRY PUMP

Every Contact Inch
Highly Corrosion Resistant

ODS Pumps are available, of course, unlined for handling non-corroding slurries or solutions but when protection is necessary, all contact surfaces are lined with rubber or neoprene.

So, if you have a pumping problem that calls for a diaphragm pump — regardless of the pH involved — get all the facts about the O.D.S. It can handle just about any slurry or solution found in industry. And it has one of the best low-maintenance features to be found among all pumps: a no-linkage, hole and slot-free diaphragm. Compressed air or vacuum actuates the diaphragm.

Our Bulletin 309-R — recently issued — gives all the latest details about the O.D.S. Pump. In writing for a copy, tell us about your pumping problem. We have a line of acid-handling centrifugal pumps, too — the Olivites.



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Johannesburg, Transvaal

When inquiring check CP 6566 on handy form, pgs. 2-3

No correctly installed
HEXTEEL® or FLOORSTEEL® floor surface

...HAS EVER WORN OUT!



8,100 lbs.

The tread of the wheel is always on steel

That's why more than 250 nationally famous firms use
KLEMP
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HEAVY-DUTY SURFACE ARMOR AND
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The crashing impacts of multi-ton loads—the deadly corrosive action of wet chemicals—the no less deadly wear of time—all have failed to daunt the floor correctly reinforced with Klem Hexteel® or Floorsteel®. For new floors—for repairing or resurfacing old floors over wood, concrete or asphalt. Get cost-cutting facts TODAY!

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Withhold
3-0845

When inquiring check CP 6567 on handy form, pgs. 2-3

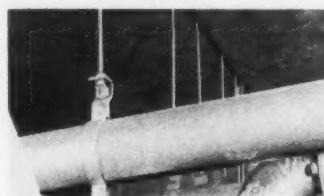
MAINTENANCE

No drilling or welding
needed for assembly
of pipe system

Uses: As pipe supports.

Features: Completely adjustable, to assure exact pitch and permit changes and additions at any time, system is said to reduce engineering detailing and eliminate special erection equipment. Assembly is accomplished with a saw and wrench — no drilling or welding required.

Description: System consists of steel channel members, concrete inserts, pipe rollers, brackets, clamps, and fittings which are bolted to-



gether to form a frame-work of mechanical supports. For overhead piping, concrete inserts and clamps are used as in photo.

(Pipe support system is a product of Unistrut Products Co., Dept. CP, 1013 W. Washington Blvd., Chicago 7, Ill. . . . or for more information check CP 6568 on handy form, pages 2 and 3.)

Copper flakes throughout
characterize form-stable
packing compound

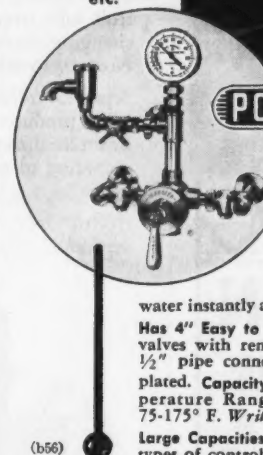
Uses: For valves, pumps, and expansion joints.

Features: Self-molding packing compound features a dispersion of pure copper flakes throughout body of stick-shaped material.

Description: Compound is soft, yet form-stable and dry to touch. A few sizes are said to cover requirements for the average industrial process plant. Compound is Designed expressly for steam, hot water, or process air applications, under vacuum or pressure.

(Coppersticks, self-molding packing compound, is a product of Surveys, Inc., Dept. CP, 219 Euclid Ave., Trenton, N. J. . . . or check CP 6569 on handy form, pages 2 and 3.)

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Water
Temperature
Control Made
for Industrial
Processes
Color Photo Film
Processing,
Lens Polishing
Hydrotherapy,
etc.



POWERS THERMOSTATIC
WATER MIXER

Supply Fixture 4629PD, used above by AUTHENTICOLOR Laboratories, N.Y. City, thermostatically mixes hot and cold water and delivers the mixture at any constant temperature desired—regardless of pressure or temperature changes in water supply lines. Failure of cold water instantly and completely shuts off the delivery.

Has 4" Easy to Read Dial Thermometer, stop check valves with removable strainers, vacuum breaker, 1/2" pipe connections, and is completely chrome plated. Capacity: 10 gals. per min. at 45 psi. Temperature Ranges 65-115° F.; 60-125° F.; and 75-175° F. Write for Bulletin 367.

Large Capacities up to 1000 gpm available in other types of controls. Write for Catalog WC.

THE POWERS REGULATOR CO., SKOKIE, ILL.
Offices in over 50 Cities, see your Phone Book • Established in 1891

When inquiring check CP 6570 on handy form, pgs. 2-3

CAMBRIDGE GAS ANALYZERS

Labor saving — profit producing!

Cambridge Gas Analyzers continuously analyze and simultaneously record on one chart from one to six constituents of a gas. They may be used for most simple and many complex mixtures of gases. Dependable and labor-saving, these Analyzers make possible increased efficiency and savings in the operation of steam generating plants, cement kilns, blast furnaces; in the production of inert gases; in metallurgy, in petroleum refining and other chemical processes.

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Send for literature mentioning
application

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PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 6571 on handy form, pgs. 2-3

CHEMICAL PROCESSING

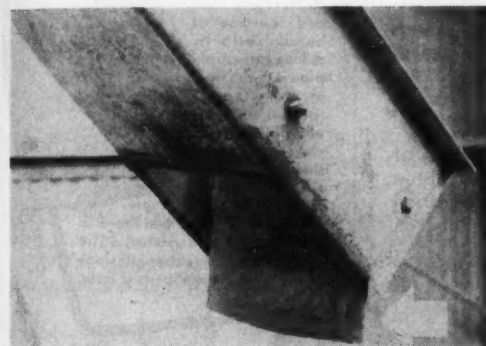
Equipment life stretched by product which outlasts what it protects and cuts maintenance cost . . .

steel-rubber sheets can be fabricated to exact specifications, in any shape

Uses: For combatting abrasion and corrosion on equipment such as chutes, hoppers, tanks, or shaking tables, which are normally subjected to excessive wear.

Features: Material, a combination of steel and rubber, is said to outlast equipment it protects and minimize maintenance cost, increase equipment life, and increase production by eliminating shut-downs for repairs.

Description: Two types of Iron-Rubber are offered — reinforced and non-reinforced. Reinforced material is composed of two sheets of rubber permanently bonded to central core of expanded steel. This type can stand on edge without buckling, can be bent to fit corners without springback, or can be shaped to fit practically any contour. Non-reinforced material is a single sheet of rubber and is more



Protective sheeting being used as gravel chute liner and breaker strip

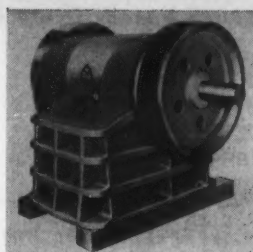
flexible than the reinforced. Both types are light in weight and large sections can be easily handled by one man.

If standard sizes and thicknesses will not answer a particular problem, material can be fabricated to exact specifications, in any shape. Material can be made in any length and to any thickness, up to 36" wide.

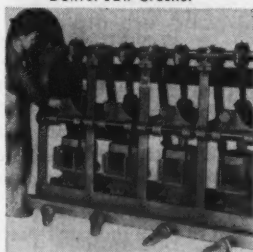
(Protective sheeting is a product of Magic Chemical Co., Dept. CP, 121 Crescent St., Brockton 2, Mass. . . or for more information check CP 6572 on handy form, pages 2 and 3.)

On the lookout for plant engineering equipment and supplies? . . .

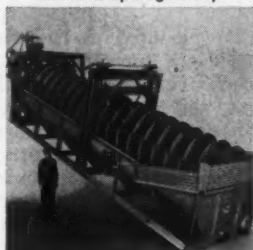
Your task will be easier if you consult the alphabetical Product Directory, pages 221 to 224, for pumps, valves, electrical items, motors, etc. This is another Putman-style service provided in every issue.



Denver Jaw Crusher



Denver Diaphragm Pump



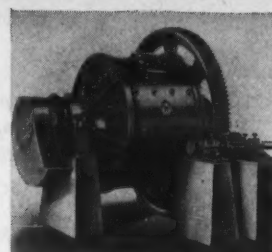
Denver Spiral Classifier



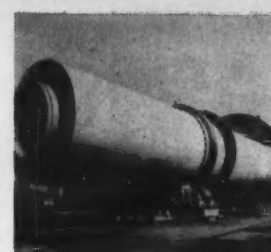
Denver Automatic Sampler



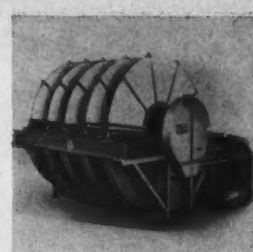
Denver Testing Service



Denver Steel Head Ball Mill



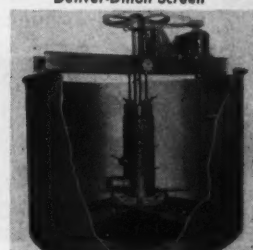
Denver Standard Dryer



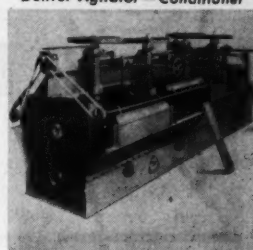
Denver Disc Filter



Denver-Dillon Screen



Denver Agitator-Conditioner



Denver 'Sub-A' Flotation



Denver Hydroclassifier

LOWER COST PUMPING

is possible with

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RUBBER LINED PUMP



HERE'S WHY...

Power cost is substantially less than for other sand pumps on similar service. REASON: greater hydraulic efficiency resulting from simple design, rubber parts and lighter weight. Accuracy of rubber parts results in 1½ to 3 times greater efficiency than other sand pumps.

LEARN MORE ABOUT ACTUAL SAVINGS

If you pump ½" abrasive material, describe your pumping requirements. Let us study and report specific advantages of Denver SRL Pumps over pumps you now use. Ask today for bulletin P9-B8.

Also Available in "Acid Proof" Construction

EXAMPLES OF DENVER SRL RUBBER LINED PUMP CURVES*

Size	Gals. Water Per Minute	20' head	40' head	60' head	80' head	100' head
2" x 2" SRL	50 RPM HP	838 .60	1090 1.5	1320 2.3	1525 3.2	
3" x 3" SRL	100 RPM HP	760 1.1	1053 1.9	1303 3.4	1453 4.3	
5" x 5" SRL	300 RPM HP	590 2.4	800 5.1	956 8.3	1087 11.5	
6" x 6" SRL	1000 RPM HP		862 14.4	1005 22.6	1122 30.0	
3" x 3" SRL-C	150 RPM HP	870 1.5	1145 3.2	1385 5.3	1580 7.2	1745 9.6
5" x 4" SRL-C	350 RPM HP	655 2.9	850 5.4	1020 8.3	1160 11.4	1280 14.5
8" x 6" SRL-C	800 RPM HP	500 5.7	655 11.6	780 16.8	890 22.3	980 28.6
10" x 8" SRL-C	2000 RPM HP	485 14.0	610 27.8	710 41.2	800 56.3	855 71.6

(*Multiply these horsepower ratings by the specific gravity of your pulp to determine actual brake horsepower required.)

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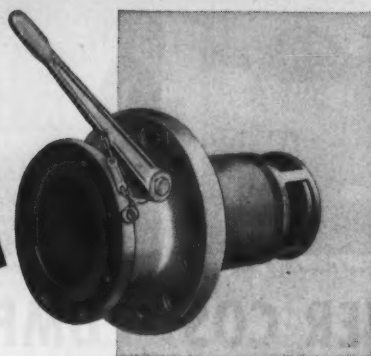
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Offices also in El Paso, Vancouver, Mexico, D.F., London, Johannesburg

When inquiring check CP 6573 on handy form, pgs. 2-3

OCECO Internal TANK VALVES



prevent "run-offs" from storage tanks

- Valve is held open with a lever, and a fusible link that melts when exposed to grass fires, etc., permitting a spring to close the valve tightly, cutting off the flow.

Fabricated steel construction. Free flowing design. Mounts on standard single flange tank nozzle. 3 inch to 8 inch sizes. Write for fully descriptive data sheet.

OCECO TANK FITTINGS
THE JOHNSTON & JENNINGS CO.
division of PETTIBONE MULLIKEN CORP.
4751 West Division St. Chicago 51, Illinois

When inquiring check CP 6574 on handy form, pgs. 2-3

NEW NAGLE PUMPS to lower your costs of handling Abrasive, Corrosive, Thick or Hot Liquids!

TYPE KC
HORIZONTAL
SHAFT PUMP

TYPE CWS-C
vertical shaft pump
(with submerged
bearing)

TYPE CWO-C ver-
tical shaft pump
(with cantilever
shaft—no sub-
merged bearing)

TYPE CWO-C
vertical shaft
pump with
tailpipe

● Get the facts on this new series. Learn how they can cut your costs!

NAGLE PUMPS, INC.
1247 Center Ave., Chicago Heights, Ill.

NAGLE PUMPS

PUMPS FOR ABRASIVE AND CORROSIVE APPLICATIONS

When inquiring check CP 6575 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Proper porosity control given by impregnated leather packings

Uses: As oil seals and packings.

Features: Packings retain good properties of leather, and yet give proper control of porosity, according to manufacturer.

Description: Products, called Conpor, are based on the impregnation of high-quality leathers, usually chrome retan, with Thiokol polymers. Impregnants are solventless liquids that cure to tough resilient rubbers at room temperatures without shrinkage. Impregnant is insoluble in oil, does not melt or deteriorate at operating temperatures, is flexible and ages well.

Tests are said to have indicated practically no change in volume of packings upon immersion in oil or solvent.

Packings are produced in two categories — full and limited depth impregnations. In each category several porosities are available. Full thickness modifications are three: most porous, K-200, recommended for standard shaft-type oil seal applications; K-210, recommended for low pressure applications involving sealing of such dry cleaning solvents as carbon tetrachloride and trichlorethylene; K-220, intended chiefly for hydraulic and pneumatic packings operating at pressures up to at least 2000 psi.

(Impregnated leather packings are a product of Chicago Rawhide Mfg. Corp., Dept. CP, 1311 Elston Ave., Chicago 22, Ill. . . . or for more information check CP 6576 on handy form located between pages two and three.)

Maintains sealing efficiency at temps from -30°F up to 500°F . . .

self-molding packing compound will not harden in extended use

Uses: As a packing compound for valves and pumps operating under negative pressures.

Features: Said to be the densest compound developed for such services, it maintains sustained sealing efficiency at temperatures ranging from minus 30°F to 500°F. Formulations are available for temperatures from minus 30°F to minus 100°F.

Description: Molyvac is a self-forming packing compound, embodying molybdenum sulfide as a dry, non-fluid, and non-fugitive lubricant. It is unaffected by pressure surges or temperature changes in process or heating systems. Compound operates without supplementary sealing media, such as oil or water. It is furnished in pre-loaded Plasticks, cylindrical in shape, approximately 6" long, and in 1/4, 5/16, 3/8, and 1/2" diameters.

(Packing compound is a product of Surveys, Inc., Dept. CP, 219 Euclid Ave., Trenton 9, N. J. . . . or for more information check CP 6577 on handy form, pages 2 and 3.)

VALUABLE NEW Swepeco BOOKLETS for users of Pipe & Tubing



1. This illustrated catalog covers latest developments in the manufacture of Swepeco's large diameter, corrosion resistant pipe, tubing and welding fittings — new features such as extra high finishes and tolerances exceeding those of seamless. Sections on metals and alloys, sizes, lengths, weights and dimensions.

2. Here are facts and formulae of unusual help in solving practical pipe and tubing problems. These tables, many unobtainable elsewhere, include corrosion resistance charts, special properties, pipe flow data, fluid-flow-friction losses, beam formulae, ASTM specifications, bolt strength, tank capacity and miscellaneous data.



Swepeco pipe, tubing and welding fittings, 3" to 48" O.D., are obtainable in stainless steel, nickel alloys, titanium, Carpenter "20", Hastelloy alloy, other alloys. Lengths up to 20 feet; extra heavy schedules and with high cylinder finishes. Rigid inspection of every shipment is assured.

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When inquiring check CP 6578 on handy form, pgs. 2-3

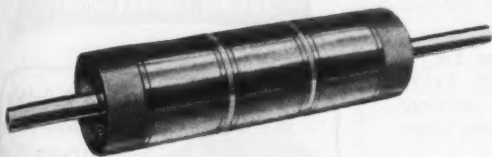
CHEMICAL PROCESSING

Design of 4" magnetic pulley gives it strength of units twice its size

Uses: As a magnetic separator for conveying systems where belt thicknesses are $\frac{1}{8}$ " or less and speeds do not exceed 30 rpm. Unit is also suited as a sheet steel feeder or controlling roll.

Features: Tests have indicated that 4" permanent magnetic pulley is as strong as units twice its size. Design of pulley utilizes a peripheral magnetic field, running completely around pulley surface parallel and circumferentially to shaft.

Description: Non-electric pulley is built in 4, 8, 10, 12, 14, 16, 18, 20, and 24" belt widths. Because of proximity of magnetic castings and pole plates to



Supplied in 4 to 24" belt widths

shaft, pulleys are furnished with heavy, non-magnetic, one-inch stainless steel shafts. Pulleys themselves can be supplied in stainless steel.

Standard construction is a flat-face pulley. When a crown is required, user can wrap a strip of aluminum around center of pulley to control belt.

(Permanent magnetic pulley is a product of Eriez Mfg. Co., Dept. CP, 1945 Grove Dr., Erie 6, Pa. . . or for more information check CP 6579 on handy form, pages 2 and 3.)

Temp, moisture, abrasion resistant rubber used in gaskets . . .

permits passage of insulated wire, holds back high pressure steam and water

In continuous vulcanizers manufactured by The Standard Machinery Co., Mystic, Conn., wire and cable pass from insulator through a curing chamber and cooling tube, then to windup rolls. Gaskets in curing and cooling sections must permit passage of insulated material with speeds ranging to 700 fpm, while maintaining seal to keep high pressure steam and water from escaping in quantity. Steam pressure reaches 220 psi and temp 400°F. Cold water is forced into cooling tube at 90 to 200 psi.

Gaskets molded of Hycar American rubber maintained tight seal after long periods of high temp, high moisture, high speed operation.

(Hycar synthetic rubber is a product of B. F. Goodrich Chemical Co., Dept. CP, 324 Rose Bldg., St., Akron, Ohio . . . or check CP 6580 on Reader Service slip located between pages 2 and 3, for more information.)

On Latex Paints . . .

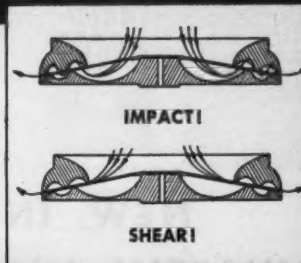
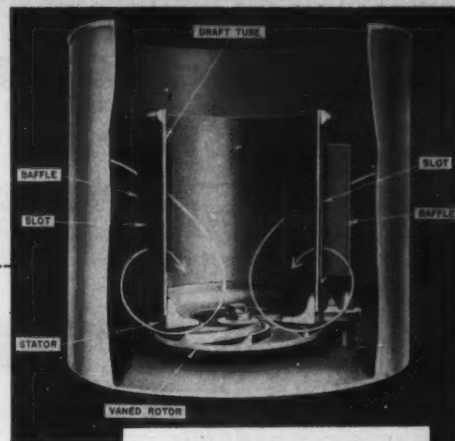
Get COMPLETE Dispersion of ALL Ingredients Regardless of Formulation

With the ABBÉ DISPERSALL MIXER you can . . .

- Cut mixing time in half (or better)
- Get maximum color dispersion from a minimum amount of color
- Do the entire job in ONE machine . . . over the entire range of your color card
- Fill directly from the mixer or pump to storage
- Run red . . . or blue . . . or green and be ready for white in ten minutes
- Pay off the first cost in less than a year

The complete story is in Catalog 68. Write for a copy.

Note the combined impact and shear of the rotor-stator phase of this mixer, added to the vigorous turbulent mixing action. That's why it's the best mixer available for latex-based paints . . . and any other fluid mixing operation where break-up of lumps and air bubbles is important!



ABBÉ ENGINEERING COMPANY

When inquiring check CP 6581 on handy form, pgs. 2-3

46 CHURCH STREET
NEW YORK 7, N. Y.

Planning to rebuild old shallow filters?

Then you've undoubtedly considered the desirability of having an ALOXITE aluminum oxide porous plate bottom. Getting rid of your graded gravel has its obvious advantages. Moreover, there are certain supplementary benefits worth taking into account.

For example, porous plates permit you to lower your filter media. Consequently, you can step-up back washing to use the greater available distance to the wash gutters (see B+). You also benefit by a simultaneous increase in operating head. This is often a problem where topography limits the available head. And finally, porous plates permit you to deepen your filter bed, if so desired, by using the added space in the area A+.

ALOXITE bottoms are easy to install, easy to operate, and the most economical way to modernize your shallow filters (or any other type filter). There are hundreds of them in operation today—some in their 15th year of service.

YOU'LL WANT OUR POPULAR BOOKLET. It's the up-to-date reference source on porous media. Its 56 pages cover all fields of filtration and diffusion—including information on application, specifications, designs, installation and operation. Write for your free copy today.



Porous Filter Bottoms by

CARBORUNDUM

Trade Mark

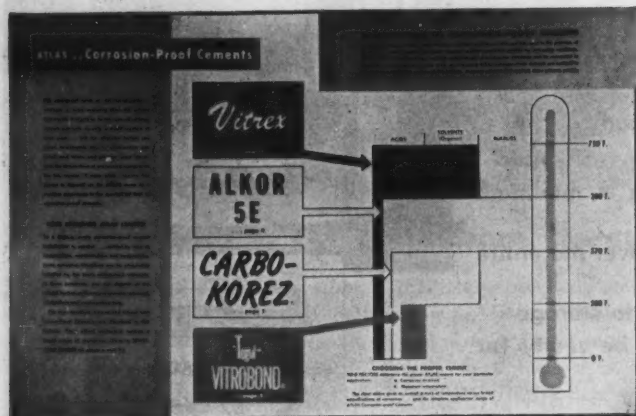
Dept. S-24, Refractories Division

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company.

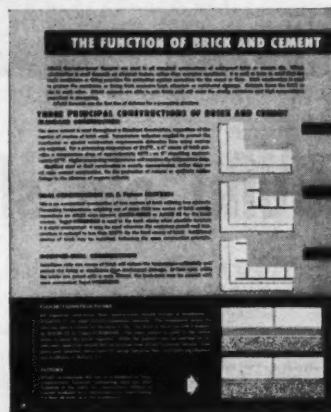
When inquiring check CP 6582 on handy form, pgs. 2-3

The Carborundum Company, Perth Amboy, N. J.

... a practical guide to Corrosion-proof cements



NEW, INFORMATIVE BULLETIN AVAILABLE WITHOUT OBLIGATION



HERE in concise form you will find complete data on the basic types of corrosion-proof cements and constructions. Each cement is graphically shown in its relationship to temperature and the broad classes of corrosives handled.

In addition, RESISTANCE TABLES are included which cover 176 common corrosives, and relate them to cements satisfactory for that service. And, ESTIMATING TABLES guide you in figuring not only cement, but also brick requirements for most corrosion-proof construction jobs.

SEND FOR YOUR COPY OF BULLETIN 5-2 TODAY



ATLAS PRODUCTS STAND
... between your process
and corrosion.

Corrosion-proof: Cements ... Coatings ... Linings

26 CHESTNUT STREET
MERTZTOWN, PENNSYLVANIA
Plant also at Houston, Texas

When inquiring check CP 6583 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Iron-tight adhesion, flexibility offered by silk screen finish for cellulose acetate plastic

Announcement has been made of a silk screening finish for cellulose acetate plastics which is said to have iron-tight adhesion, extreme resistance to plasticizer migration, and flexibility beyond requirements of any standard test.

It is reported that after drying coated Tenite I panels for 24 hr, coating samples were tested at 100°F and 80% RH for 72 hr without loss of coating adhesion. When exposed for 400 hr in a fadeometer, the seven colors tested showed no fading. Elasticity tests indicated no cracks when coating on pieces of sheeting was stretched into a 4" hemisphere.

This coating material, Logoquant Series AV-46, will be available in a wide range of standard and matched pigmented and pigmented-metallic colors.

(Silk screening finish is a product of Logo, Inc., a subsidiary of Bee Chemical Co., Dept. CP, 13799 South Avenue "O", Chicago 33, Ill. . . or for more information check CP 6584 on handy form, pages 2 and 3.)

Improved design of degreaser includes obstruction-free tank walls

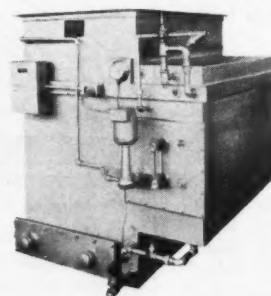
Uses: In vapor degreasing applications.

Features: Design features include obstruction-free tank walls, recessed condensing coils, removable pump chamber and water separator manufactured of solid stainless steel, one end maintenance, and demand-type control of water into water condensing system.

Description: Condensing coil on degreaser has been recessed into a back compartment. Solvent condensate trough normally found under coils has been replaced by a large sloped condensate tray. Coil is said to have advantage of being easily replaced if and when necessary by the use of easy-to-reach compression fittings.

Over-size water separator and pump compartment are fabricated of solid stainless steel and welded to a flanged plate to permit removal of unit for periodic inspections of storage tank interior. Design permits conversion of a straight vapor degreaser to a vapor spray degreaser.

Service connections and clean-out openings are located at one end of tank, making neater installation and simpler maintenance. Water condensing system,



Design permits conversion
of vapor degreaser to
vapor spray degreaser

Catawissa PERFECT SEAL Unions

HOT FORGED from solid, rectangular steel bars, designed and produced for dependable, long-life service under the severest piping conditions!

A TYPE FOR EVERY USE!
FOR ALL PRESSURES!
FOR ALL TEMPERATURES!



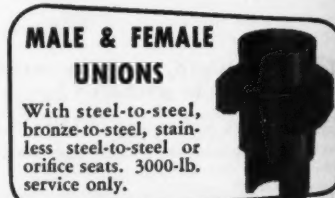
Standard & Double
Extra Heavy
UNIONS

Available with
screwed or socket
weld ends. 3000-
lb. sizes 1/4" to 3";
6000-lb. sizes 1/4"
to 2".



ORIFICE
UNIONS

With screwed or
socket weld ends.
3000-lb. and 6000-
lb. service.



MALE & FEMALE
UNIONS

With steel-to-steel,
bronze-to-steel, stain-
less steel-to-steel or
orifice seats. 3000-lb.
service only.



FULL STAINLESS &
FULL ALLOY
STEEL UNIONS

With screwed or
socket weld ends.
3000-lb. and 8000-lb.
service.

WRITE FOR CATALOG II
Showing the complete Catawissa
line of Perfect Seal products

CATAWISSA VALVE AND
FITTINGS COMPANY

620 Mill St. • CATAWISSA, PA.

When inquiring check CP 6583
on handy form, pgs. 2-3

CHEMICAL PROCESSING

when used with properly located automatic water temperature regulator, minimizes formation of atmospheric moisture, reducing possibility of hydrolysis with degreasing solvent. Reduction of moisture extends life of degreaser tank.

Automatic water temperature regulator is so installed that maximum water is required only at times of maximum heat input, when no work is being cleaned. Work introduced into degreaser results in regulator throttling down so that only proper amount of water is sent through cooling system. Regulator controls temperature in coil as well as in jacket, eliminating possibility of extremely cold water entering jacket and causing moisture condensation.

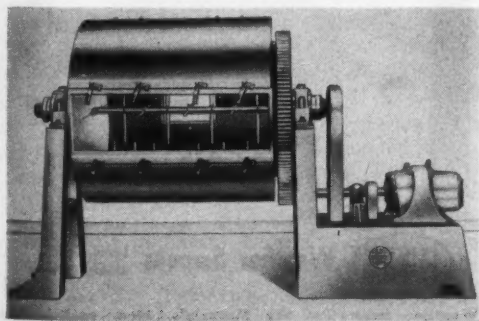
(Vapor degreaser is a product of Metalwash Machinery Corp., Dept. CP, 901 North Ave., Elizabeth 4, N. J. . . or for more information check CP 6586 on handy form, pages 2 and 3.)

Asbestos fibers evenly coated with carbon black using cylinder mixer

Uses: For coating asbestos fibers with carbon black, other powders, or fillers.

Features: Fibers are kept separate by intermeshing prongs of mixer so pigment is uniformly distributed to all areas of mixture and finished batch is free from clusters of poorly coated fibers. Each fiber is thoroughly coated and batch consists of loose fibrous material.

Description: Cylinder mixer uses prongs or spiders mounted around inside of barrel and others mounted on a revolving shaft which runs through center of cylinder at a higher speed—ranging from three to five times faster—than does the cylinder.



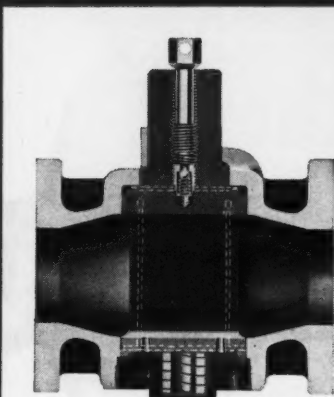
Asbestos fibers are kept separate by intermeshing prongs of mixer

Cylinder is driven by a gear and pinion. Revolving shaft is connected to same drive shaft by means of a roller chain. Stuffing boxes are provided to seal shafts where they extend through cylinder. Mixing time varies from five to 30 minutes.

(Cylinder mixers are available in a wide range of sizes from Paul O. Abbe, Dept. CP, Little Falls, N. J. . . or for more information check CP 6587 on handy form, pages 2 and 3.)



WITH TEFLON GASKETS



Gasket characteristics:

- self lubricating
- can't bind
- unique shape maintains lubricant release
- pressure tight

Round Port Valves—100% Obstruction Free • Rectangular Port Valves with Full Pipe Area • Venturi Valves for Economy

Now standard on Q.C.F. Lubricated Plug Valves, this exclusive Q.C.F. development gives protection against head leakage at high pressure and at temperatures up to 450° F. Greatly reduces turning torque. Increases service life

without materially affecting price.

Four years of field service tests under most exacting conditions have confirmed the effectiveness of this new discovery. Get all the facts from your nearby Q.C.F. valve representative.

Q.C.F. Cylindrical Plug Valves

Representatives in 50 Principal Cities



Write for Catalog No. 4-CP and Price List. American Car and Foundry Company, Valve Division, 1501 E. Ferry Avenue, Detroit 11, Michigan

When inquiring check CP 6588 on handy form, pgs 2-3

AMERICAN CHEMICAL PAINT COMPANY

AMBLER  PENNA.

Technical Service Data Sheet

Subject: INDEX OF ACP CHEMICALS FOR METAL PRESERVATION AND PAINT PROTECTION

METAL	OPERATION	ACP CHEMICAL
ALUMINUM	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Preparation for Painting	"ALODINE" "DURIDINE" "DEOXIDINE"
	Protection from Corrosion	"ALODINE"
BRASS	Brightening	"ACP BRIGHT DIP"
	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "CUPROTEK"
	Corrosion Prevention Soldering Flux	"CUPROTEK" "FLOSOL"
COPPER, BERYLLIUM, AND COPPER ALLOYS	Brightening	"ACP BRIGHT DIP"
	Cleaning	"DEOXIDINE" "DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "CUPROTEK"
	Coating Steel with Copper	"CUPRODINE"
	Corrosion Prevention	"CUPROTEK"
	Scale Modification	"RIDOXINE"
	Soldering Flux	"FLOSOL"
	Stripping Copper Coatings	"ACP COPPER STRIPPING SOLUTION"
GALVANIZED IRON, ZINC, AND CADMIUM	Cleaning	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Corrosion Proofing	"ZINODINE"
	Paint Banding	"ZINODINE"
	Phosphate Coating, in Preparation for Painting Soldering Flux	"LITHOFORM" "FLOSOL"
IRON AND STEEL	Chromate Coating, in Preparation for Painting	"CROMODINE"
	Cleaning	"ACP RIDOLINES AND RIDOSOLS"
	Cleaning for Painting	"DEOXIDINE" "DURIDINE"
	Coating with Copper	"CUPRODINE"
	Drawing and Extrusion	"GRANODRAW"
	Paint Banding	"CROMODINE" "DURIDINE" "GRANODINE" "PERMADINE"
	Point Stripping	"THERMOIL-GRANODINE"
	Phosphate Coating, in Preparation for Painting	"CAUSTIC SODA AND SOLVENT NO. 3"
		"DURIDINE" "GRANODINE" "PERMADINE" "THERMOIL-GRANODINE"
	Phosphate Coating, to Protect Friction Surfaces	"THERMOIL-GRANODINE"
	Pickling with Inhibited Acids	"RODINE"
	Rust Prevention for Unpainted Iron	"PEROLINE"
	Rust Proofing	"PERMADINE"
	Rust Removal—Brush, Dip, or Spray	"THERMOIL-GRANODINE"
	Soldering Flux	"DEOXIDINE" "FLOSOL"
MAGNESIUM	Cleaning	"DURIDINE" "ACP RIDOLINES AND RIDOSOLS"
	Pickling	"RODINE (M-200)"
STAINLESS STEEL	Cleaning	"DEOXIDINE"
	Coating with Copper	"CUPRODINE"
	Pickle Polishing	"RODINE"
	Soldering Flux	"FLOSOL"



WRITE FOR DESCRIPTIVE FOLDERS ON THE
ABOVE CHEMICALS AND FOR INFORMATION ON
YOUR OWN METAL PROTECTION PROBLEMS



When inquiring check CP 6589 on handy form, pgs. 2-3

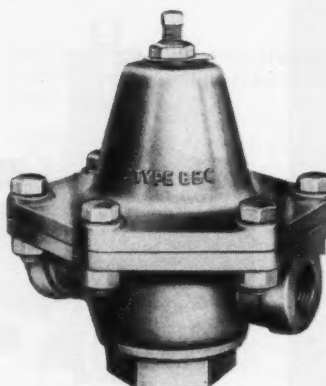
MAINTENANCE

No sticking or binding
in regulating valve —
design does it

Uses: For use on Bunker "C"
oil service, as well as other dirty
liquids or fluids with high viscosity.

Features: Owing to design in-
corporated in contour of piston
seat, which is substantially a "uni-
versal joint" arrangement, this
valve will still close off under
practically all operating condi-
tions, according to manufacturer.
There are no sliding fits, nothing
to get out of alignment or cause
seizing, sticking, or binding.

Description: All sizes are of
the direct acting, single seated,
spring loaded diaphragm type pres-
sure reducing and regulating valve,
which automatically reduces higher
pressure to a lower pressure and
maintains that lower pressure at a
constant.



Working parts readily accessible

Valves are self-contained, with
simple pressure adjustments. Inner
valve and valve seat are both re-
newable, both of high grade stain-
less steel.

Working parts are readily accessible
for cleaning or replacement. To
clean or replace parts, all that is
necessary is removal of bottom
plug, with valve still in line. Body
seat unscrews with a standard hex-
agon socket wrench.

(Pressure reducing and regulating
valve is a product of A. W. Cash
Valve Mfg. Corp., Dept. CP,
Wabash and Morgan, Decatur 60,
Ill. . . . or for more information
reader may simply check CP 6590
on the convenient Reader Service
slip located between pages two and
three.)



Raw material inventory of Monel,
Stainless Steel, Copper and Copper Al-
loys on hand. Send drawing—advise
quantity. Free catalog on request.

JOHN HASSALL, INC.

P.O. Box 2196

Westbury, N. Y.

When inquiring check CP 6591 on handy form, pgs. 2-3

Now! Load and Unload Protected from
RAIN • SLEET • SNOW



Weather Screens Low Cost
Dock Covers

All Weather protection for Materials, Men, and Machines

- Warehouse to Boxcar
- Warehouse to Truck

Representatives in all principal cities

The Elwing Corp., Dept. CP
915 W. Adams St., Jacksonville 4, Fla.

Please send me information about Elwing.

Name

Company

Address

When inquiring check CP 6592 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Eliminates time lost in refilling
spray gun's small fluid
reservoir . . .**

unit draws cleaning solvent directly from 55 gallon drum

Uses: For continuous spray cleaning of mechanical equipment by solvent, emulsion, or aqueous solutions.

Features: Gun is designed to draw cleaning fluid directly from 55 gal drum, thus eliminating time lost in refilling small supply can reservoirs.

Description: Siphon spray gun, Model B-202-M, has die-cast handle built to stand over four tons of shock. Air flow control valve is on haft to save trips to air-supply valve regulator. Ball-check prevents fluid back-flow. Unit also has an adjustable lock-tip nozzle.



For work at floor level or from scaffolding

(Spray gun is a product of John B. Moore Corp., Dept. CP, P. O. Box 3, Nutley 10, N. J. . . . or for more information concerning manufacturer's product, reader may simply check CP 6593 on handy form, pages two and three.)

**Adapted for high or low temp use,
pipe dope is chemically inert,
acts as insulating material**

Uses: For use on pipes of almost any metal, plastic, or glass, in production or laboratory applications.

Features: Chemically inert, hence resistant to any chemical passing through pipes in production processes, pipe dope is an application of Teflon. Applied as readily as any ordinary dope, it is adapted for both high and low temperature use, over a range from -150°F to 700°F. Dope acts as an insulating material, both electrically and thermostatically.

Description: Teflon pipe dope is non-toxic and will not contaminate foodstuffs or pharmaceuticals. It acts as a lubricating material to make pipe joining easier and faster. Dope prevents leakage even after pipes have been backed off one full turn. It is said to permit easy disassembly of joints in materials that normally cannot be separated, once they have been turned up tight.

(Teflon pipe dope is a product of Plastics, Inc., Dept. CP, Drawer 9, Bristol, R. I. . . . or for more information concerning manufacturer's product, reader may simply check CP 6594 on convenient Reader Service slip located between pages two and three.)

WHAT *dustube* COLLECTORS EFFICIENCY MEANS IN THE CHEMICAL INDUSTRY



A CLEAN STACK WITH CARBON BLACK

No visible discharge from the two stacks equipped with Dustube Collectors at Cabot Carbon Company! Virtually 100% recovery of extremely fine particle size carbon black is accomplished by the Dustubes filtering the material from 55,000 c.f.m. gas at 275° F. From 10 to 15% of the production of this valuable material had formerly been lost to the atmosphere.

Filtration efficiency like this is typical of the Dustube in the chemical industry because it is the most dependable method of dust removal

that will insure a "clean stack" under a wide variety of operating conditions.

With the new synthetic fabrics, the high efficiency Dustube can now be used under temperature and corrosive conditions in applications heretofore beyond the scope of cloth collection.

For your dust and fume control problems it will pay you to investigate the Dustube—the dust collector that combines simplicity, efficiency and dependability. Write for complete information today.



Catalog 72-B tells why Dustube is a more efficient method of dust and fume control. Write for your copy now.

American
WHEELABRATOR & EQUIPMENT CORP.
478 S. Byrkit St., Mishawaka, Ind.



When inquiring check CP 6595 on handy form, pgs. 2-3

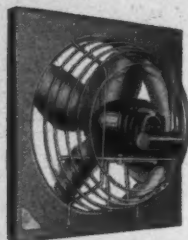
"Here's My Problem"

CUSTOMER:

First, one of our older buildings has areas which need spot ventilation. Then, in another building, we're going to need large-capacity exhaust to get rid of dust and moisture. Finally, we need additional capacity in an old system where we've just installed some air cleaning equipment. Now, my problem is . . .



Which "Buffalo" Fan Shall I Use?



"Buffalo"

BUFFALO REPRESENTATIVE: "To begin with, no single type of fan is the best solution to all problems. The best and cheapest answer to your spot ventilation, for instance, is the new Type "NV" Breezeo Fan. An efficient propeller fan with strong, rigid, die-formed square panel, the "NV" is simple to install in outside walls wherever you need to exhaust stale air. It can be operated free-air or duct-connected ($\frac{1}{4}$ " to $\frac{1}{2}$ " s.p.) equally well. The "NV" is made in sizes for 500 to 5500 cfm capacities, and if you need larger capacity, use the new "NV" Heavy-Duty Belt-Air. It's in sizes up to 90,000 cfm.

"Now, for your large-capacity exhaust system, you'll get greatest long-run satisfaction and economy with the new Type "BL" Limit-Load Centrifugal Fan. It's the type recommended most frequently for large systems — straight ventilation, air washer and air conditioning supply. You can't overload it, and it gives stable performance from shut-off to free air delivery. And you can pick exactly the rated capacity you need, from 1000 to 500,000 cfm, with no waste in an oversize fan or over-specified driving power.

"But where you need to step up the capacity of a system, mount an axial flow fan in a straight portion of your ductwork. The "Buffalo" Axial Flow is light, compact and takes little more space than your duct. It's extremely efficient in straight runs, and has guide vanes to keep turbulence and noise at a minimum. So you see, there is no one fan for all jobs. At Buffalo, we make all types and sizes, so that you can pick one that's practically tailored to your particular need. We've been building fans for 77 years, too, which means that you can be sure of any "Buffalo" fans you pick."

SUGGESTION:

most important of all, remember that Buffalo Engineering Sales Representatives are all technical graduates, factory trained for a number of years; they know fans and their application. Located in all principal cities, they are ready to assist you, too, in fan selection. Why not call on yours today?

BUFFALO FORGE COMPANY

524 Broadway Buffalo, N.Y.
Publishers of "Fan Engineering" Handbook
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.
Sales Representatives in all Principal Cities

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT FORCED DRAFT COOLING
HEATING PRESSURE BLOWING EXHAUSTING

When inquiring check CP 6596 on handy form, pgs. 2-3

MAINTENANCE

Chemical pump impeller made of chlorinated polyethylene . . .

material permits pumping of many acids, other corrosives

Uses: As an impeller in manufacturer's chemical pumps.

Features: Impeller is made of chlorinated polyethylene polymer (Hypalon, a product of duPont). It is said to be ideal for such chemicals as chlorine dioxide, chromic acid, nitric acid, sodium hypochlorite, stannous chloride, sulfuric acid, and pickling and electroplating solutions.

Description: Impeller material is reported dimensionally stable up to 160°F and permits pump operating pressures to 150 psi. It has zero moisture absorption, high immunity to attack by ozone, good flex life, and resistance to oxidation and abrasion.

(Pumps with Hypalon impellers are a product of Eco Engineering Co., Dept. CP, 12 New York Ave., Newark 1, N. J. . . or for more information concerning manufacturer's product, reader may simply check CP 6597 on the convenient Reader Service slip located between pages 2 and 3.)

High impact strength featured by plastic wire connector

Specially developed plastic used in these connectors is said to have both high impact strength and excellent dielectric properties. Material does not absorb moisture and is impervious to most chemicals.

Screw-on wire connector has one-piece molded plastic threads and body. Uniform threads are said to grip wires securely without cutting wire strands. Connectors will withstand temperatures to 400°F.

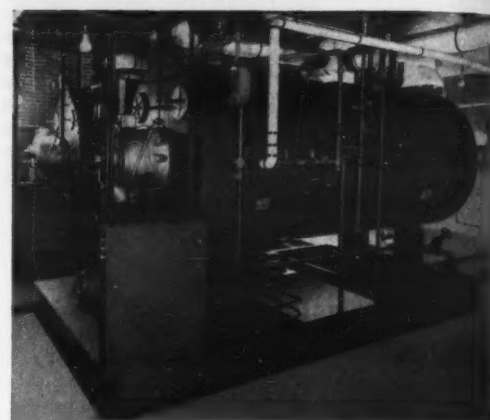
Green in color, connectors are UL approved for wire combinations from 2 No. 18 to 1 No. 14 and 2 No. 18. Two sizes are available, A-1 and A-3.

(All-plastic wire connectors are a product of Ideal Industries, Inc., Dept. CP, Sycamore, Ill. . . or for more information concerning manufacturer's product, reader may simply check CP 6598 on the convenient Reader Service slip located between pages 2 and 3.)

Steam Costs Go DOWN

where

Powermasters Go In



For Example:

A textile plant cut steam costs 20% by replacing a coal-fired boiler with these two oil-fired Powermaster Packaged Automatic Boilers. Low-cost space-saving installation, completely automatic operation, higher quality steam, much less attention and maintenance, and smokeless combustion are advantages gained.

Have You Checked Your Steam Costs Lately?

Many kinds of industrial plants, food processors, schools, institutions, public buildings, laundries, housing projects, and utilities are also enjoying the cost-saving advantages of Powermaster boilers.

Send for New Bulletin

describing and illustrating all cost-saving advantages of Powermaster units.

O'S
Powermaster

PACKAGED AUTOMATIC BOILERS

Sizes to 500 HP; pressures to 250 psi.

Orr & Sembower, Inc.
Morgantown Rd., Reading, Pa.

When inquiring check CP 6599 on handy form, pgs. 2-3

CHEMICAL PROCESSING

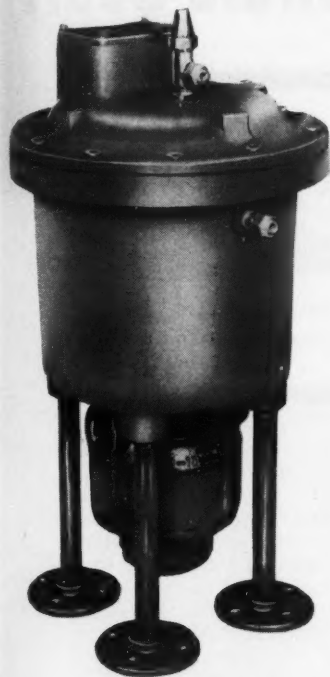
MAINTENANCE

Hermetically sealed pump handles low temperature refrigerants

Uses: For application in refrigeration recirculating systems to increase efficiency and simplify controls.

Features: Unit is said to be particularly effective on low temperature and ultra-low temperature Freon refrigeration systems.

Description: Hermetically sealed pump is available in eight sizes ranging from 4 to 40 gpm against



Available in eight sizes

heads up to 50 psi with motors from $\frac{3}{4}$ to 3 hp.

Single and multiple evaporators may be handled under varying head and flow conditions. Oil return feature automatically holds oil concentration in evaporators to a minimum.

(Product of Heatron, Inc., Dept. CP, 333 Eberts Lane, York, Pa. . . . or for more information check CP 6600 on handy form, pages 2 & 3.)

For more information on product at right, specify CP 6601 . . . see information request blank between pages 2 - 3.

Half the Welding Skill is in the Fitting . . .



WATSON-STILLMAN FORGED STEEL SOCKET-WELDING FITTINGS make your pipe welding jobs easier three ways:

1. The fittings themselves support and align the pipe—no need for special fixtures or tack welding. Just slip the fitting over end of pipe and weld.
2. No chill rings are needed. Welding "icicles" can't form inside the pipe. Socket welding is actually lap welding—not butt welding.
3. Ample "come-and-go" in socket makes fussy accurate measurement and cutting of pipe unnecessary.

WATSON-STILLMAN FITTINGS are drop forged of highest quality steel to produce the well-known forged-fiber structure for maximum strength against pressure, temperature, shock and vibration. Extra strength is built-in in other ways, too—such as the extra reinforcement of long bands extending well beyond the bottom of the socket.

W-S SOCKET-WELDING FITTINGS are also available in forged stainless and alloy steels for exceptional service at high and low temperatures and for maximum resistance to corrosion. Write today for information.

Sold Through Leading Distributors

WATSON-STILLMAN FITTINGS DIVISION

H. K. PORTER COMPANY, INC.

Roselle, N. J.

FOR FOOL-PROOF EXTRUSION

TWO WORMS ARE BETTER THAN ONE!

FASTER—BETTER MIXING—BETTER QUALITY

With Welding Engineers Inc.
Equipment You Can Obtain

**LARGER
OUTPUT
CAPACITIES
ON
RODS
SHAPES
PELLETS!**

The improved feed action of the Welding Engineers Auxiliary Worm Extruder is realized in all sizes of machines . . . from the twin screw 2" model with a 3 1/2" diameter hopper, used in laboratory work and small scale production . . . up to the large machines. The 6" model has a 10" x 12" hopper which permits acceptance of material which might otherwise be impossible to get into the worms. These are compact, self-contained units which process at high rate output. If you are interested in:

CLAYS CATALYSTS FILTER CAKES
DRUGS DIATOMACEOUS EARTH METAL ORES
CAULKING COMPOUNDS RUBBER ACCELERATORS
BATTERY ELECTROLITE MIXES POLYISOBUTYLENE

. . . . Get the Welding Engineers' story!
For efficiency, low-cost production and improved quality your best investment is a

WELDING ENGINEERS, INC.

Auxiliary Worm Extruder



There is a wide range of sizes from laboratory models producing 125,000 pellets per minute to the largest model capable of extruding 1,500,000 pellets of 3/16" diameter every minute.

SEND FOR THIS COMPLETE FOLDER
with descriptive data, illustrations of models and the complete story of the Welding Engineers Auxiliary Worm Extruder

WELDING ENGINEERS, INC.
NORRISTOWN, PENNSYLVANIA

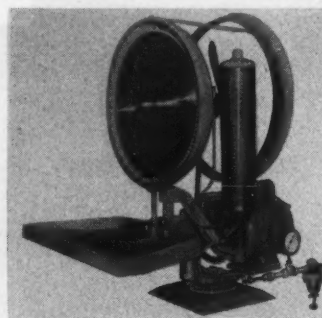
When inquiring check CP 6602 on handy form, pgs. 2-3

MAINTENANCE

**Controls RH within 1 %
in spaces of at least
15,000 cu ft**

Uses: Unit is designed to give accurate moisture control anywhere constant humidity is needed.

Features: Humidifier automatically maintains desired moisture content in a space of at least 15,000 cu ft. It operates at the slightest change in atmospheric conditions. Desired RH (relative humidity) can be maintained within a variation of approx 1% either way, according to manufacturer.



Operates at slightest change in atmospheric conditions

Description: Each machine is equipped with individual controls which makes possible moisture where and when needed. Propeller type fan assures an even circulation of air throughout entire area. Power is furnished by individual motor built into each unit.

(Humidifier is a product of Southworth Machine Co., Dept. CP, Portland, Me. . . . or for more information check CP 6603 on handy form, pages 2 and 3.)

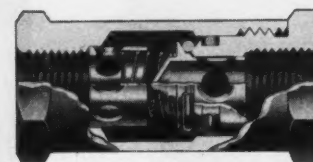
Design of paint mixer eliminates splashing

Cadmium plated mixer for paint and similar liquids can be used in any 1/4" hand or power drill. It is suitable for gallon, quart, or pint cans. Design is said to eliminate splashing and provide complete mixing. Mixer is self cleaning in any liquid solvent.

(Paint mixer is a product of Conn and Co., Dept. CP, 11 S. Marion St., Warren, Pa. . . . or for more information check CP 6604 on handy form, pages 2 and 3.)

Did you ever stop to think

Check valves are important! be sure- with Circle Seal!



CIRCLE SEAL CHECK VALVE

—the valve that is guaranteed not to leak

If you use check valves or if your product design incorporates check valves, remember—a check valve that doesn't do its job costs you or your customer lost time or money. Valve leakage may result in a petty annoyance or a major catastrophe. Excessive wear results in high maintenance costs. This trouble may easily be avoided by the use of Circle Seal precision check valves. So for positive control of liquids or gases, take no chances, be sure by specifying Circle Seal.

Here's what Circle Seal Principle offers you:

TYPES

Check
Relief
Vent & Breather
Excess Flow
Manual Release

FEATURES:

- Perfect sealing at all back pressures.
- Quiet, chatter-free operation.
- Low pressure drop.
- Quick opening—positive closing.
- Amazing service life.

If you use check valves, ask us to have our representative call on you.



SEAL precision valves

JAMES DOND CLARK

2181 East Foothill Blvd • Pasadena 8, California
Representatives in Principal Cities.

When inquiring check CP 6605 on handy form, pgs. 2-3

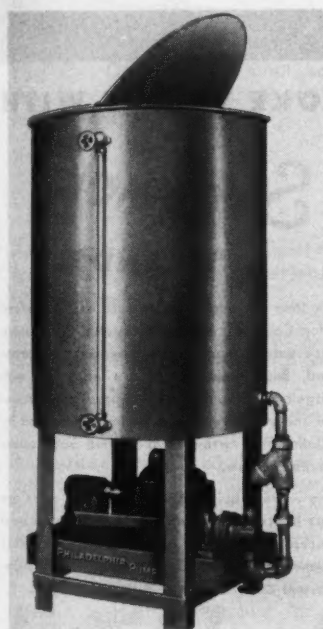
CHEMICAL PROCESSING

MAINTENANCE

Self-contained chemical feed unit is ready for hook-up, operation

Unit is a self-contained assembly comprising a welded-steel chemical solution tank of 50 or 100 gal capacity mounted above a controlled capacity pump. Unit is completely piped, ready for connections to plant chemical feed piping, and to electrical control equipment, whether manual or automatic. It operates directly from available electrical circuits. It is supplied with sight gage and stainless steel strainer between pump and tank.

Mechanical agitators can be provided to give vertical agitation rather than the usual horizontal type. Controlled capacity pumps

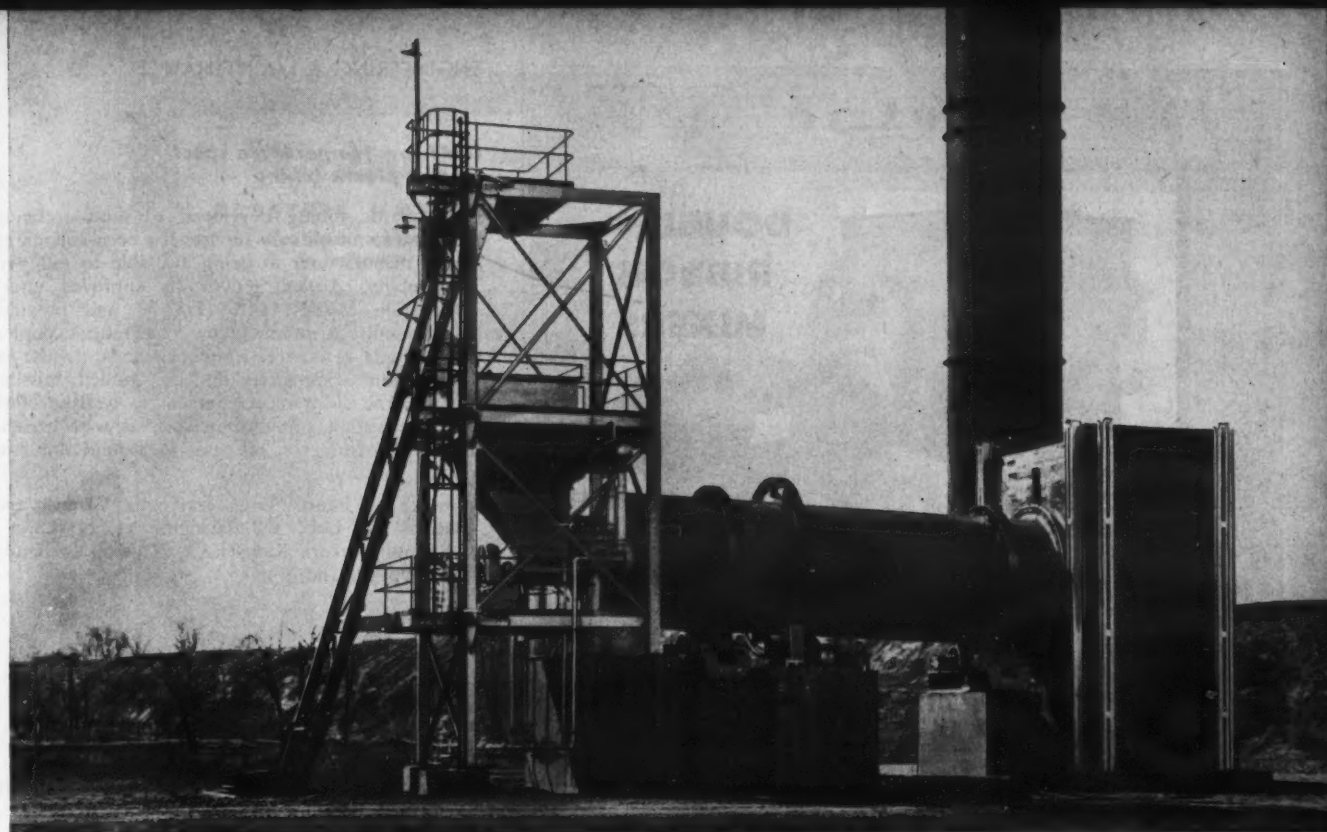


Unit operates directly from available electrical circuits

are available in either simplex or duplex types with spring-loaded, double-ball valves of stainless steel or special alloy.

(Product of Philadelphia Pump and Machinery Co., Dept. CP, Wynnewood, Pa. . . . or check CP 6606, pages 2 and 3.)

For more information on product at right, specify CP 6607 . . . see information request blank between pages 2 - 3. ➡



rotary kiln

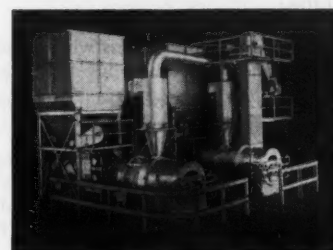
Burns Waste

. . . provides easy, economical, smoke-free disposal of still and tank bottom sludge, office waste, rags, food waste, and other oil refinery, industrial or commercial wastes.

● Material to be burned is raised in the skip bucket and fed into the brick lined kiln with a specially designed feeder. Kiln can be rotated at various speeds, permitting the burning time to be altered to meet changing requirements. Ashes are collected in the brick chamber. An auxiliary oil burner is provided for use when the materials are not readily combustible. Consult Bartlett-Snow on your next drying, cooling, calcining, waste disposal or other heat engineering problem. Our wide experience can save you both time and money!



Special Stainless Steel Batch Dryer for Drying Fine Catalyst without Dust Loss.



Two Complete Drying Systems, Can Be Operated Together—or Singly—to Meet Varying Plant Requirements.

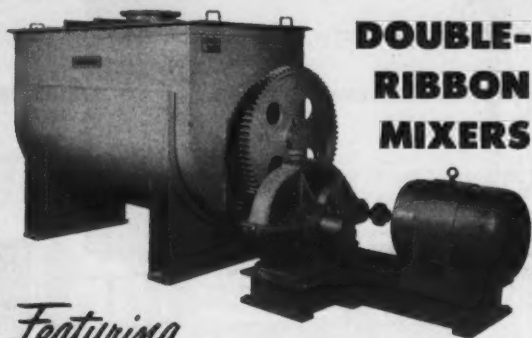
DESIGNERS
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**BARTLETT
B-SNOW**
CLEVELAND 5, OHIO

FABRICATORS
ERECTORS

Dryers • Coolers • Calciners • Kilns
"Builders of Equipment for People You Know"

Devine

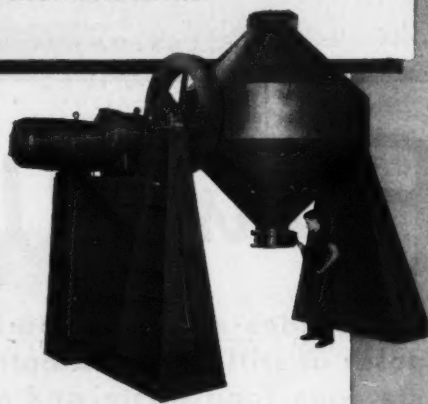


DOUBLE-RIBBON MIXERS

Featuring

"Mix-and-Counter Mix" action

Devine Double-Ribbon Mixers provide increased production along with reduced processing costs. Here's why: "mix-and-counter mix" action for more efficient mixing; removable ribbon assembly for fast cleaning; functional design for wide range of heavy duty mixing operations; all-welded construction for long, trouble-free service.



DOUBLE-CONE BLENDERS

Featuring

"Roll-and-Fold" action

Proven on the job to be dependable and efficient—today thousands of Devine Double-Cone Blenders are used throughout the food and chemical processing industries for blending powders, crystals, etc. They provide positive control of charging and discharging, rapid cleaning and minimum contamination.

Write for complete catalog information . . .

J. P. DEVINE MFG. CO., Inc.
49th Street and AVRR Pittsburgh 1, Pennsylvania

Devine

PROCESSING EQUIPMENT

When inquiring check CP 6608 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

USAF low temperature specs met by plastic tubing

Clear plastic tubing developed to meet technical requirements of military services has been announced by the manufacturer as being available to industry. This tubing, Airflex #6904, is approved under specification MIL-I-7444A (USAF) and provides high flexibility at extremely low temperatures coupled with fungus resistance. Material finds its use in military and commercial aircraft, guided missiles and airborne electronic equipment as well as other varied insulation applications, such as wire harness sheathing, wiring conduit, and as a fluid drain or transfer medium.

(Product of Fibron Div., Irvington Varnish and Insulator Co., Dept. CP, Irvington 11, N. J. . . . or for more information check CP 6609 on handy form, pages 2 and 3.)

Silicone content aluminum paint protects metal surfaces having temperatures over 400°F

Uses: For exterior use on metal surfaces with temperatures ranging from 400 to 1000°F.

Features: Formulated with a heavy silicone content, paint "fuses" to surface, will not discolor, blister, flake or burn off, and gives protection against severe weather and chemical fumes usually found where extreme heat is present.

Description: Thermalite formulation calls for one-coat application, which will give correct mil thickness for maximum durability and coverage of surface irregularities. Manufacturer does not recommend use of paint where temperatures are less than 400°F, since such surfaces can be well protected by a standard product at lower cost.

(High-heat exterior paint is a product of Tropical Paint & Oil Co., Dept. CP, 1210-52 W. 70th St., Cleveland 2, Ohio . . . or for more information check CP 6610 on handy form, pages 2 and 3.)

Nylon-covered rope hangs up good record for durability

Uses: For rope applications where combined good appearance and high durability are requisite.

Features: Addition of dyes to the nylon makes it possible to achieve lustrous colors.

Description: Rope is made by process in which nylon is extruded solidly around a core of wire cable. It withstands abrasion, kinking and corrosion and is made in sizes ranging from 3/63 to 1-1/8" diameter.

(Rope is product of Rochester Ropes, Inc., Dept. CP, Culpeper, Va. . . . or for more information check CP 6611 on handy form, pages 2 and 3.)

*What!
No pipe threads?*



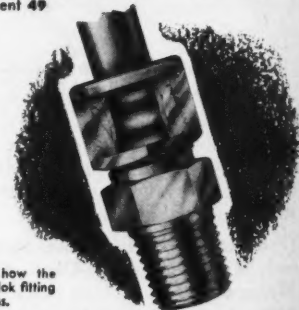
HOKE VALVES WITH

Swagelok®

ENDS

Now they are available from stock at Crawford Fitting Company and all Swagelok Distributors. These valves, manufactured by Hoke, Incorporated, Englewood, N. J., are equipped with Swagelok ends to provide leakproof and torque-free seals on every type of instrumentation installation. The arrow on the valve body shows direction of flow.

Hoke valves equipped with Swagelok ends are made in brass, aluminum, steel and stainless steel in sizes to meet your requirements. For further information and Swagelok catalog address Department 49



Here's how the Swagelok fitting functions.

CRAWFORD FITTING CO.

884 East 140th Street Cleveland 10, Ohio
Telephone CV-765

When inquiring check CP 6612 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Dielectric strength and flexibility are retained by insulation throughout life of electrical equipment

An improved line of Class H fiberglass tubing and sleeving that is said to have unusual dielectric strength and keep its flexibility throughout the life of electrical equipment to which it is applied has been announced as available.

Called BH 1151, this insulation is produced in 27 sizes from braided fiberglass coated with heat resistant silicone rubber (GE's SE-100). Its electrical and physical properties are unaffected by continuous operation through a temperature range of minus 90°F to 400°F. It will also withstand 450°F for 96 hr, 500°F for four hr, and 600°F for 15 min.

Silicone coating is said to give insulation an average minimum electrical break-down ranging from 7000 v for NEMA class H-A-1 to 1500 v for class H-C-2. Electrical resistance is 100,000 megohms after 48 hr tests at 25°C and 50% RH. Material can be twisted or bent without crazing or cracking or losing electrical strength.

(BH 1151 insulation is a product of Bentley, Harris Mfg. Co., Dept. CP, Conshohocken, Pa. . . or for more information check CP 6613 on handy form, pages 2 and 3.)

Anti-friction bearing capacity upped from 25 to 50% by spherical roller bearings

Uses: For applications in railroad journals, vibrating screens, steel mill machinery, and in numerous other fields.

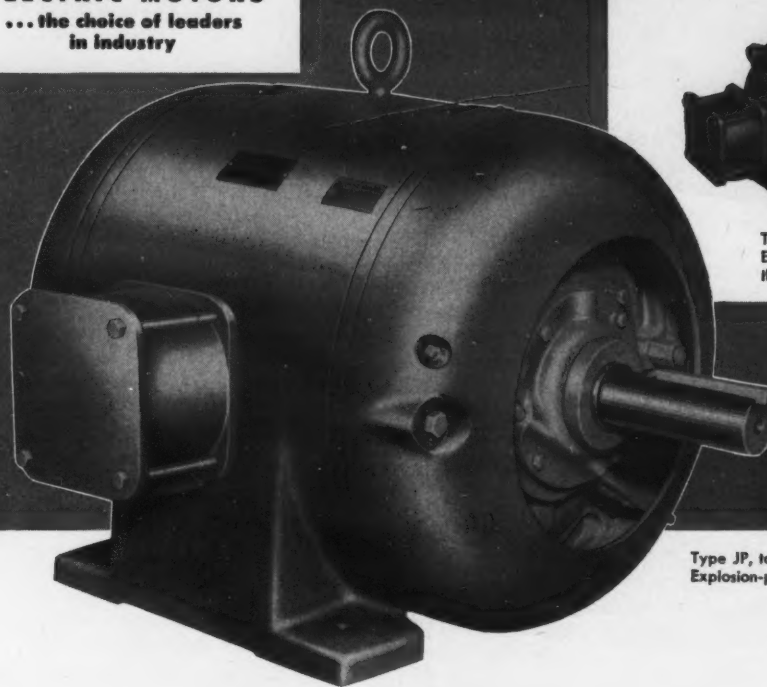
Features: Increased anti-friction bearing capacity of from 25 to 50%, and service life 2 to 3½ times longer than formerly possible, are said to be obtained with improved design of spherical roller bearings. Improvement has been accomplished without any change in size or weight, according to manufacturer.

Description: Inner race of improved bearing is of a design without undercuts and integral flanges. Its capacity is increased because longer rollers can be used, assuring more effective contact between rollers and rings. A separate guide ring, between the two rows of rollers, allows them to take the position which their contact with the rings dictates. Load distribution is uniform at all times and greatly increased capacity and life are said to result.

Each row of rollers is held in a window-type cage made of high tensile strength, cold-rolled brass. Cage is strong and well supported. Even when used in applications where stresses upon the cage are most severe, such as eccentric locations in shaker screens, trouble-free operation results. Improved spherical roller bearing, designated as "C" type, is available in series 222 and 223.

(Roller bearings are a product of SKF Industries, Inc., Dept. CP, P. O. Box 6731, Philadelphia 32, Pa. . . or for more information check CP 6614 on handy form, pages 2 and 3.)

Wagner®
ELECTRIC MOTORS
...the choice of leaders
in industry



Type JP, non-ventilated.
Explosion-proof. ½
through 1½ hp.

Type JP, totally-enclosed fan-cooled.
Explosion-proof. 2 to 250 hp.

for extra protection against corrosion

SPECIFY **Wagner** CAST IRON FRAME MOTORS

Here are stock motors specifically designed for use in chemical plants, oil fields, refineries, steel mills—for rugged industrial applications where dust, dirt, moisture, or corrosive vapors are present.

These motors are totally-enclosed in corrosion-resistant cast iron and all parts exposed to the atmosphere are of corrosion-resistant material—including the nameplate. They feature completely protected laminations . . . special varnish treated windings . . . and a running shaft seal.

Wagner Cast Iron Frame Motors are available in fan-cooled standard and explosion-proof types in ratings from 2 to 250 hp, and in non-ventilated standard and explosion-proof types in ratings from ½ through 1½ hp. Wagner Bulletin MU-132 gives complete information.

A skilled Wagner engineer can help you select a Wagner Motor to meet your most exacting specifications. Call the nearest of our 32 branch offices, or write us.



WAGNER ELECTRIC CORPORATION
6359 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE
BRAKE SYSTEMS—
AIR AND HYDRAULIC

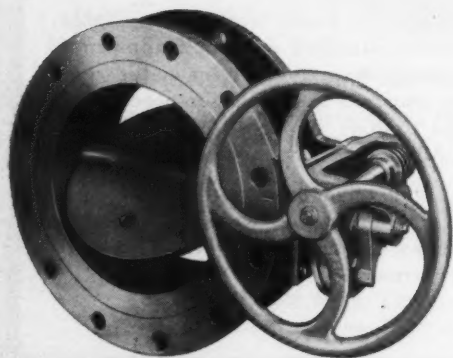
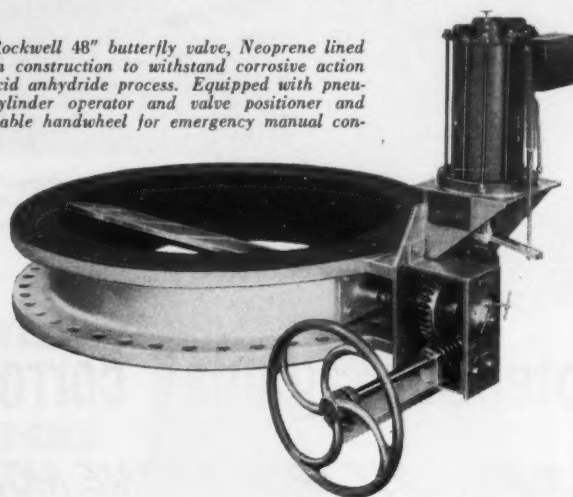
When inquiring check CP 6615 on handy form, pgs. 2-3

PERFORMANCE *plus*

**AUTOMATIC-MANUAL
VERSATILE
Control and Shut-Off**

For minimum pressure drop uniform quick control and positive shut-off — commercial, drip or air tight — W. S. Rockwell Valves are your answer. Sizes to 108"; pressures to 300 p.s.i., and higher, temperatures to 2000° F. Made of any metal or rubber lined. Write for Valve Catalog.

W. S. Rockwell 48" butterfly valve, Neoprene lined cast iron construction to withstand corrosive action in an acid anhydride process. Equipped with pneumatic cylinder operator and valve positioner and detachable handwheel for emergency manual control.



W. S. Rockwell heavy duty butterfly valve of stainless steel with worm and segment type open gearing and handwheel control, for operation at temperatures to 550° F.

W. S. ROCKWELL VALVES
W. S. ROCKWELL COMPANY
2204 ELIOT ST. • FAIRFIELD, CONN.

When inquiring check CP 6616 on handy form, pgs. 2-3

MAINTENANCE

Reduction in size, weight offered by rigid duct connector . . .

performs satisfactorily in temps to 500°F

Uses: For handling difficult fluids and air under critical conditions of temperature and pressure.

Features: Design of coupling, which is furnished in both aluminum and stainless steel, makes possible substantial reductions in size, weight and number of parts for comparable couplings. It provides a pressure-proof, leak-proof seal, easily installed and easily disassembled for inspection and overhaul purposes.

Description: Made for tube sizes from 1 to 2 1/2" in aluminum and in sizes 1 to 4" in stainless steel, connector consists of three parts: nut, coupling, and insert ring. Parts are easily assembled.

Aluminum connector performs satisfactorily in temperatures up to 500°F, fluid or air. Upward limits of temperature of stainless steel connector are same as that of stainless steel tubing used.

(Duct connectors are a product of Rubber Teck, Inc., Dept. CP, 19115 S. Hamilton St., Gardena, Calif. . . . or for more information check CP 6617 pages 2 & 3.)

Controlled volume pump for dangerous fluids works submerged

Uses: For handling dangerous fluids in submerged operation.

Features: Entire liquid end assembly is submerged in a sump, leaving only driver and discharge assembly exposed. With pumping cylinder submerged, problems of stuffing box leakage are said to be eliminated.

Description: Basically, this controlled volume pump is a variation of the "miniPump"—an established line of manufacturer's products—and will operate approximately in the same range: capacities to 3200 ml/hr; pressures to 1000 psi.

(Controlled volume pump is a product of Milton Roy Co., Dept. CP, 1300 E. Mermaid Lane, Chestnut Hill, Philadelphia 18, Pa. . . . or check CP 6617A, pages 2 and 3.)

AGILENE

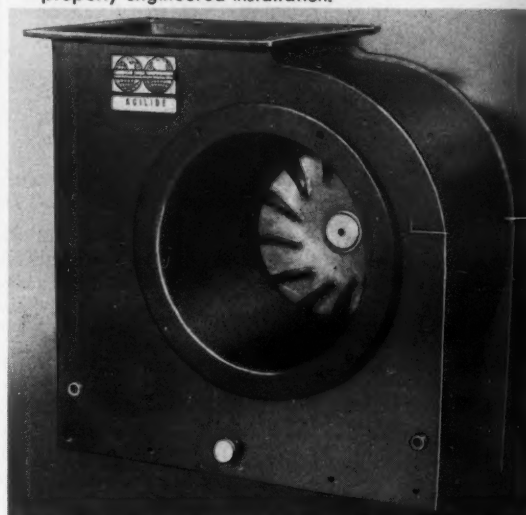
AGILIDE

The Most Economical Answer

TO YOUR CORROSION PROBLEMS

IN CHEMICAL PROCESS EQUIPMENT

Agile's high-grade thermoplastic construction materials—AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered installation.



AGILE CENTRIFUGAL VENTILATING FANS FOR EXHAUSTING ACID VAPORS

are now available in AGILENE (polyethylene) and AGILIDE (non-plasticized polyvinyl chloride). They are of Hot Gas Welded construction and are chemically resistant to a wide variety of corrosive fumes and vapors. These fans are designed in accordance with sound ventilating principles and follow closely the construction of metal ventilators. Five sizes are available ranging from 270 to 1670 c.f.m. Larger sizes will be made upon request.

SEND YOUR INQUIRIES TO



American Agile Corporation

Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT. C-1

When inquiring check CP 6618 on handy form, pgs. 2-3

CHEMICAL PROCESSING

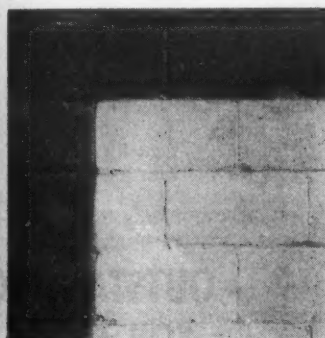
MAINTENANCE

Volcanic ash helps seal masonry walls in one application of paint

Uses: Oil base paint is for water-proofing masonry surfaces.

Features: Paint is said to resist moisture on interior and exterior masonry surfaces for years, with just one application. It contains a grit-like volcanic ash filler which, seals up small pores and stops capillary action. According to manufacturer, material waterproofs without peeling, chipping, blistering, or cracking.

Description: Available in 7 attractive colors, paint requires no sizing and can be applied over unpainted or previously painted surfaces, wet or dry. It is said to



Paint decorates as it waterproofs masonry surfaces

be equally effective on either interior or exterior surfaces, above or below grade, and can be used as a sealer and filler for high gloss enamels. It is reported that paint colors will not chalk off, stain, or fade.

Paint is ready-mixed and can be applied by brush or spray over cinder blocks, cement blocks, concrete, brick, stone, stucco, tile, and asbestos. It is said to resist lime, alkali, salt, mold and fungus.

(Damp-Seal is a product of The Monroe Co., Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio . . . or for more information concerning manufacturer's product, reader may simply check CP 6619 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 6620 . . . see information request blank between pages 2 - 3.



Excessive throw-off stopped with . . .

• The lubrication of exposed gears on a 250 ton press caused trouble for a midwest metal-working company. Lubricant throw-off was excessive, creating unfavorable working conditions; frequent applications of grease interfered with production and raised lubricant consumption. The gear shield in use required pre-heating.

A Standard Oil Lubrication Engineer surveyed the situation three years ago and suggested the use of Calumet Viscous Lubricant 10X, because it is a grease of superior adhesive quality and does not require pre-heating.

Since that time the plant has used Calumet Viscous Lubricant 10X with outstanding results. Run-off to the floors and other parts has been eliminated. Gears are lubricated with maximum efficiency. Most important, lubricant consumption has been cut by more than 20%.

Calumet Viscous Lubricants

Where open gears as well as some enclosed types are difficult to lubricate, try Calumet Viscous Lubricants. Their superior adhesive quality and greater wetting ability give them high resistance to the washing-action of water and to thinning and throw-off at high temperatures. Several grades of Calumet Viscous Lubricants can be applied by spraying.

Standard Oil Lubrication Engineers are stationed throughout the Midwest. One of these specially trained men is in your area, on the spot when you need him most. To secure his services call your local Standard Oil office. Or write: Standard Oil Company (Indiana), 910 S. Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY



(Indiana)



**You
GET
MORE!**

There are many reasons why you get more from Pritchard Heavy-Duty Cooling Towers. One of these is the exclusive patented features incorporated into Pritchard advanced cooling tower design.

Features like the POWAIRSAVER* fan—the first fan exclusively designed, built, rated and tested on an induced draft cooling tower for cooling tower service. These lightweight fans are designed for longer life with corrosion-resistant stressed skin blade surfaces, made of monel metal or stainless steel depending upon your specific service requirements. These patented fans are designed to operate with high aero-dynamic efficiency at low horsepower—your key to top cooling tower performance.

Over the years, leaders in the petro-chemical industry have learned *all* the reasons why Pritchard cooling towers give them more. If you want more efficiency . . . more years of dependable performance . . . from your next cooling tower, be sure to consult Pritchard—a founder member of the Cooling Tower Institute.

*Registered Trade Name

Industry's Partner for Progress

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Dept. 340, 210 West 10th St., Kansas City 5, Mo.
CHICAGO • HOUSTON • NEW ORLEANS • NEW YORK
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COOLING TOWERS • SPECIALIZED HEAT EXCHANGERS • GAS & AIR
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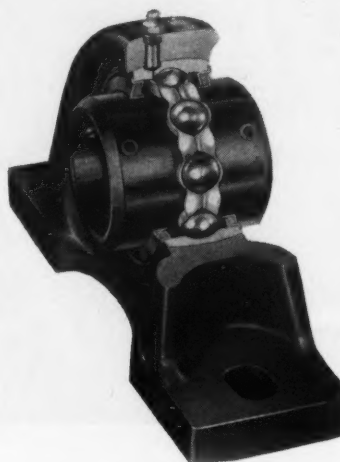
When inquiring check CP 6621 on handy form, pgs. 2-3

MAINTENANCE

Induction heat treating reduces shaft wear on ball bearing units

Production of ball bearing units with double extended race has been announced. Production features Zone Hardening, a process for induction heat treating inner race ring of units — through ball bearing path section only.

Since extended portions of race remain unaffected, hardened threads of set screws are able to bind tightly against soft threads of race for positive race-to-shaft locking.



Ball bearing path section only of inner race ring receives special heat treating

Double extension of inner race ring affords maximum support of bearing on shaft and guarantees a positive lock between inner race of bearing shaft and shaft, according to manufacturer.

This positive lock is said to effectively reduce shaft wear and fretting corrosion. As a result, machine downtime is reduced since bearing can easily be removed for replacement and shafting is not worn or corroded beyond required tolerance for new bearing fit. Shock and vibration resistance are said to be increased since most of inner race remains relatively soft and tough.

(Zone Hardened Sealmaster ball bearing units are a product of Stephens-Adamson Mfg. Co., Dept. CP, Aurora, Ill. . . or for more information reader may simply check CP 6622 on the convenient Reader Service slip located between pages two and three.)

SPERRY HAS THE ANSWERS

—Whatever Your
Filtration Problems
May Be . . .

During a half century of designing filter presses for America's manufacturing companies, Sperry has solved nearly every known type of industrial filtration problem. Sperry Filter Presses are flexible in size and design . . . there is a complete range of filter bases . . . and a choice of six different closing devices.

Send for the Sperry Filter Press catalog and you'll see why Sperry can solve *your* filtration problems efficiently and economically.

D. R. SPERRY & CO.

Batavia, Illinois

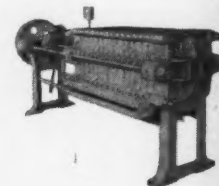
Filtration Engineers for More Than 60 Years

Eastern Sales Representative:

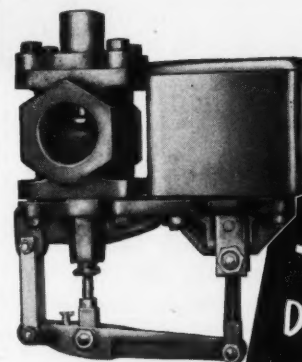
George Tarbox,
808 Nepperhan Ave.,
Yonkers 3, N. Y.
Yonkers 5-8400

Western Sales Representative:

B. M. Pilhashy,
833 Merchants Exchange
San Francisco, 4, California
DO 2-0375



When inquiring check CP 6623 on handy form, pgs. 2-3



**OUTSTANDING
FOR STEAM
SERVICE**

JOHNSON
Direct Operated
**SOLENOID
VALVES**

**Stainless steel
valve and seat.
Sizes: 1/2" to 3".
Write for facts.**

Job after job, these Johnson Direct Acting Solenoid Valves are proving an ideal answer for service on steam lines. Their design removes the solenoid proper from the heat of the line, permits a leverage system with ample power to open against differential pressures up to 150 lbs. There are no pilot valves or auxiliary pistons, and construction is really heavy duty throughout. You will find their inherent simplicity and instant response will solve a lot of operating problems like no other valve can.



THE JOHNSON CORPORATION

826 Wood St., Three Rivers, Mich.

When inquiring check CP 6624 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Compressed air purified, dried
by self-cleaning device . . .**

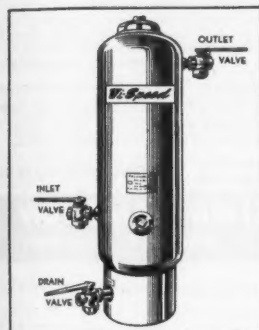
improved design increases efficiency, extends operational limits

Uses: As a purifier and dehumidifier for compressed air in plant applications.

Features: Device is self-cleaning, and improvements include self-adjusting nozzle coupled with non-clogging aspirator. Units have range of 25 to 200 cfm free air at 100 psi, effective in temperatures from 100° F to below freezing.

Description: Simplified design avoids the need for complex screens, elements, or mechanisms that

tend to clog, wear, corrode or require cleaning, adjusting, or renewing. Compressed air is treated through a system of exposure to a non-corrosive, chemically formulated drying agent. As the air is swirled through a mist of drying agent, bulk water, oils, and solids drop to residue pool. Air continues in upward surge, constantly losing moisture, then



Unit is safe in flammable areas

moves through baffle system to dispel trace vapors. When air returns to line it is pure, thoroughly dry and safe for virtually all industrial uses, according to manufacturer. Unit is safe in flammable areas.

(Vi-Speed dehumidifier is a product of Van Products Co., Dept. CP, 3795 W. 12th St., Erie, Pa. . . or for more information check CP 6625 on handy form, pages 2 and 3.)

**Ten pressed wood products
added to complete
material line . . .**

total of 13 products, 38 thicknesses available

Uses: As a permanent structural material.

Features: Material resists cracking, chipping, splintering, denting, and breaking. Ten products recently added to material line make a total of 13 products in 38 thicknesses available.

Description: Welwood Hardboard is produced by "exploding" wood chips and reducing them to soft fiber bundles. These bundles are rejoined under heat and tremendous pressure to form a hard, all-wood board. Board can be worked with standard power or hand tools and takes all standard wood finishes.

(Pressed wood materials are products of US Plywood Corp., Dept. CP, Weldwood Bldg., 55 W. 44th St., New York 36, N. Y. . . or for more information check CP 6626, pages 2 and 3.)

SARGENT'S DRYING RESEARCH LABORATORY

DRYING PROBLEMS?
JUST WRAP 'EM UP AND SEND 'EM TO US . .

**STRAIGHT ACROSS THE BOARD
FROM ABRASIVES TO YARNS**

**HERE ARE A FEW OF THE PRODUCTS WE'VE TESTED
IN OUR LABORATORY FOR MORE EFFICIENT DRYING**

Abrasives	Flock	Plastics raw stock
Apples	Flour	Printing Inks
Asbestos	Fruits	Proteins
Best Fibres	Grain (cooling)	Pulp
Beans	Hides	Rice
Bristles	Hair	Rubber—reclaimed, synthetic and natural
Building Materials	Kaolin	Salt
Calcium Carbonate	Latex	Sawdust
Chemicals	Macaroni	Sisal
Clay Fillers for paper	Metal Parts and Products	Synthetic Fibres
Cloth	Nuts	Textiles—raw and dyed
Coatings	Paints	stock
Coconut	Paper & Paper Products	Tobacco
Cotton	Peanuts	Waste Sludges
Dehydrated Foods	Peat Moss	Wool
Explosives	Pigments	Yarns
Fertilizers		

**CAN YOU ANSWER THESE
QUESTIONS ABOUT THE DRYING
OF YOUR PRODUCT?**

1. Is it dried uniformly, to exact degree desired — under complete control at every stage?
2. Are you getting maximum rate of production possible, yet maintaining automatically controlled, unvarying quality?
3. Is your drying process the most efficient possible — quality-wise, AND cost-wise? No steam or hot dry air waste? Using minimum floor area? And optimum bed depth? Would alternate airflow direction zones help, or radiant heat boosters, or varying temperature zones?
4. Is your product correctly pre-conditioned for most efficient drying? Have you ever compared drying curves to be certain that every important variable is controlled within pre-set limits — automatically?
5. Which type of dryer is best for your product — tunnel, pole, tray, truck, or special design?

SARGENT can give you the answers to these and many other questions. For better, less costly, more efficient operation of drying processes, write us.

**May We Help You . . .**

determine the one best commercially
practical way to dry YOUR product
easier, quicker, more economically?
Just write us.

C. G. SARGENT'S SONS CORP.

Graniteville, MASSACHUSETTS

REPRESENTATIVES: F. E. WASSON, 519 Murdock Rd., Philadelphia 19, Pa.
A. L. MERRIFIELD, 215 Grove Ave., Cincinnati 15, Ohio
W. S. ANDERSON, Carolina Specialty Co., Charlotte, N. C.
HUGH WILLIAMS & CO., 47 Colborne St., Toronto 1, Canada

When inquiring check CP 6627 on handy form, pgs. 2-3



AIR
can be
just as
important
to you!

Your life line . . . the single thing that keeps your plant operating at a profit . . . is efficient and continuous production. Your profits, employee morale, plant-community relations . . . all can be seriously threatened by inadequate dust or fume control.

KIRK & BLUM, for over 45 years, have been specialists in designing, fabricating and installing dust and fume control systems. From the time engineers arrive to consult, to the moment skilled erectors leave . . . your work is in the hands of one experienced, reliable organization.

Write The Kirk & Blum Mfg. Co., 3133 Forrer Street, Cincinnati 9, Ohio.

FOR CLEAN AIR . . . THE INVISIBLE TOOL

KIRK AND BLUM
DUST AND FUME CONTROL

When inquiring check CP 6628 on handy form, pgs. 2-3

MAINTENANCE

Precision heat treating, lab work handled with furnace . . .

electric, box-type unit has long-life heating elements

Uses: For precision heat treating and general laboratory work.

Features: Heating elements, said to be guaranteed for two years, are made of high temperature alloy wire which is non-scaling, non-flaking, and practically impervious to attack from sulfur and its compounds.

Description: KR Series box-type electric heat treating furnace has a temperature range of 300 to 2000°F. Series is built in five



Furnished complete with controls and transformer

sizes, from 6 x 6 x 9", to 10 x 8 x 18". Furnace is designed with skirt-type cabinet, and is furnished complete with transformer, contactors, switch box, and electric indicating temperature controller.

(Heat treating furnace is a product of K. H. Huppert Company, Department CP, 6830-32 Cottage Grove Avenue, Chicago 37, Ill. . . . or for more information on this product, reader may simply check CP 6629 on the convenient Reader Service slip located between pages two and three.)

SR-4® DEVICES IN INDUSTRY.. USES UNLIMITED



In the static testing of rocket fuel systems, Aberdeen Proving Ground needed a transducer which could respond to the high pressures and frequencies encountered.

To meet this need, Baldwin designed and manufactured 100 special SR-4 Pressure Cells with the necessary high accuracy and high frequency response.

These transducers give Aberdeen these advantages:

1. **High Accuracy**—pressure versus voltage outputs are linear within $\frac{1}{4}$ of 1% and calibration (span) is held within $\frac{1}{4}$ of 1%.
2. **High Pressures**—capacities up to 20,000 psi.
3. **Limitless Frequency Response**—attached piping or vessel reaches its frequency response limit before the pressure cell reaches its limit.
4. **Versatility**—these SR-4 Pressure Cells are all interchangeable so that they may work into the same instruments. They also work easily into an oscilloscope and can be used to operate a potentiometer.

The uses for Baldwin SR-4 devices in industry are unlimited . . . measuring load, pressure or torque more accurately and economically. Wide range of standard capacities. Please write Dept. 3206.

20,000 p.s.i. high frequency pressure cell.
Length $5\frac{1}{2}$ ", diameter 2", weight 1 lb.

TESTING HEADQUARTERS



BALDWIN-LIMA-HAMILTON
Philadelphia 42, Pa. • Offices in Principal Cities

When inquiring check CP 6630 on handy form, pgs. 2-3

Valves That Keep VISCOUS MATERIALS Flowing Freely



When you handle coal tar products, asphalts, resins, waxes, molten sulfur, varnish and other materials which congeal at ordinary temperatures, you won't be troubled with clogged valves if you use EVERLASTING Steam Jacketed Valves. The ample jacket space of these valves surrounds the ports as well as the body . . .

provides extensive heating surface and correct temperature to insure fluidity. Besides, the design of the valves is quick acting . . . non-wedging . . . and self-grinding . . . and they have the straight-through flow and lasting tightness that have made EVERLASTING Valves famous for over 40 years. Write for complete information.

EVERLASTING VALVE CO., 73 Fisk Street, Jersey City 5, N. J.
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

Everlasting Valves
for everlasting protection

When inquiring check CP 6631 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Damp surfaces aid bonding of bitumin base coating to many materials

Uses: For coating surfaces of varying porosity, such as concrete, brick, stone, plaster, and wood; for applications requiring below grade or underground protection; for use in confined and poorly ventilated places; for coating tools, piping, equipment, roofs, and many other surfaces.

Features: Penetration of coating is said to be greatly accelerated by dampening surface with water-brushed or sprayed prime coat. Dampness creates capillary attraction for coating, pulling it into pores where it locks beneath surface, and when dried to touch within one hour, provides a tough, impervious, protective film.

Description: Bitumin base coating, called Braemul, is said to be highly resistant to oils, greases, and aliphatic solvents. It is inert to mildew, fungus, and minerals. Material is non-toxic, gives off no fumes, and is non-flammable. Maximum dry temperature range for coating is minus 50°F to 210°F. It is said to remain tough and elastic within these limits, and after exposure to higher temperatures will again revert to original hardness when temperature is reduced.

When stirred thoroughly, coating is reduced to a thick, smooth liquid that can be applied quickly and easily with brush, spray, trowel, or squeegee to any desirable film thickness required — from 1/32" at coverage of 50 sq ft/gal/coat, down to ordinary paint film thickness at coverage of 250 sq ft/gal/coat. When dried, coating presents a very dark gray-black satin finish and is supplied in this color only.

(Coating is a product of Chemical Products Div., Service Industries, Dept. CP, 2103-05-07 E. Somerset St., Philadelphia 34, Pa. . . . or for more information check CP 6632 on handy form located between pages two and three.)

Combines steel mesh and filler as complete unit . . .

tough flooring stands extra-heavy abuse and remains maintenance-free

Uses: For surfacing floors subjected to extra-heavy abuse.

Features: Flooring combines as a packaged unit heavy steel mesh and resilient filler. It is said to withstand impact as well as heavy loads and remain maintenance-free for years.

Description: Resilient filler used in grid compacts to meet level of steel ribs permitting wheels to ride on steel without the noise and slipperiness of a solid steel surface. Product, called Steel-Rock, may be applied over new or old surfaces of wood or concrete, inside or outside, at a depth varying from 3/8 to 1", depending on job requirements.

(Heavy-duty flooring is a product of United Laboratories, Inc., Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio . . . or for more information check CP 6633 on handy form, pages 2 and 3.)

Cleaned in 3 minutes

Blended in 3 minutes

vs 45 minutes by previous method

More thorough blending in *one-fifteenth* the time has been the experience of one manufacturer of hard-to-blend finely divided powders, assuring a completely thorough blend in three minutes that formerly required as much as 45 minutes to one hour and without any assurance of thoroughness. One blender replaces former methods which required a separate drum for every mix.

Now, clinical cleaning between batches is completed in only three minutes thanks to the baffle-free shell and the large charging openings. Discharge is also fast, with powders delivered directly to shipping containers on a scale platform.

In your own process work there is a place where **p-k** twin shell blenders can revolutionize your blending procedures. **p-k** maintains a blending laboratory where your blending problem can be pre-tested. Send a sample of your materials for a complete blending analysis, without obligation.



101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities.

When inquiring check CP 6634 on handy form, pgs. 2-3

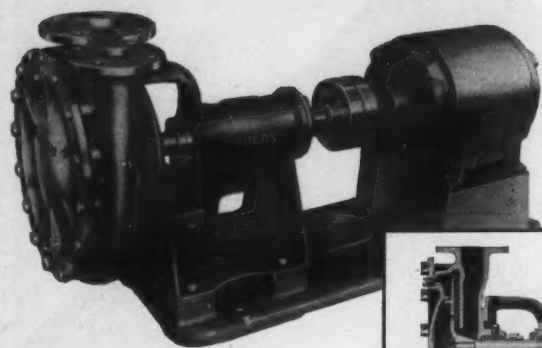


Write for Catalog No. 12

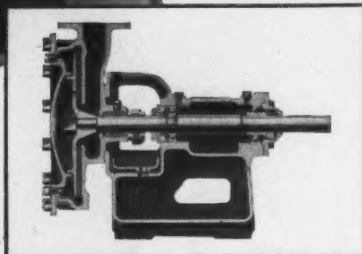
the **Patterson-Kelley Co., inc.**
720 Lackawanna Avenue, East Stroudsburg, Penn.

1000

Cut Costs in Handling Corrosives . . .



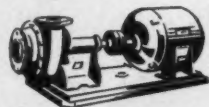
GOULDS Fig. 3705
Removal of casing cover permits interior inspection and cleaning. Capacities to 600 G.P.M. Heads to 160 ft.



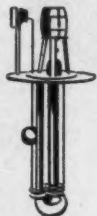
Goulds

CENTRIFUGAL CHEMICAL PUMPS

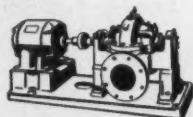
Other GOULDS for General Industrial Use



GOULDS Fig. 3169
Single stage centrifugals for general processing purposes. Capacities to 1100 G.P.M. Heads to 180 ft.



GOULDS Fig. 3047
Vertical sump pump with nonclogging impeller for water containing large solids or fibrous materials.



GOULDS Fig. 3405
Highly efficient, compact new pump for all general liquid handling applications. 19 sizes. Capacities from 200 G.P.M. to 6400 G.P.M. Heads up to 260 ft.

Here's how an alert plant engineer cut pumping costs by 75%: When the pumps he was using to handle a highly corrosive liquid wore out, he replaced them with Goulds Centrifugal Chemical Pumps, costing only one-fourth as much. The Goulds pumps have already lasted twice as long . . . and they're still going strong.

Sturdy Construction Means Long Wear

The entire fluid end of this pump is made of stainless steel and mounted on a cast iron support. Other material and alloys can be supplied for wetted parts. With the stuffing box on the suction side, pressure on it is limited to the suction head only, assuring long packing life and freedom from excess leakage. Interchangeable parts assure reduced inventories. For complete information, contact your nearby Goulds representative or write for Bulletin 725.3.



When inquiring check CP 6635 on handy form, pgs. 2-3

MAINTENANCE

Cuts operation costs in sterilization of industrial water

Uses: Unit will find application in most industries and is said to be particularly applicable to those which use large quantities of sterilized water such as the dairy, brewing, bottling, and pharmaceutical industries.

Features: Chlorination, heating and cooling, and tank storage are eliminated in electronic water sterilizer. Unit operates by guiding water by helical baffles into contact



Weights only 95 lb

with a number of Westinghouse Sterilamps, which emit powerful germ-killing ultraviolet rays. Lamps have a 6000-hr life and stainless steel sterilizer is designed for ease of maintenance and lamp replacement.

Description: Capable of handling quantities up to 7000 gal/hr, simple and compact sterilizer has no moving parts, weighs only 95 lb, and operates on 110 v, 60 c AC.

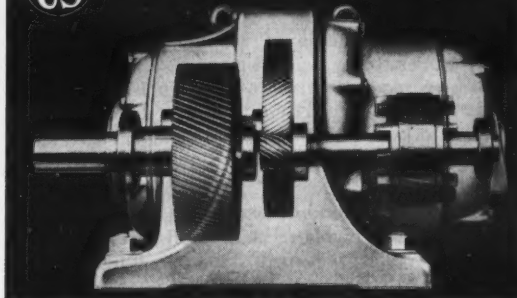
(Industrial water sterilizer is a product of Aquafine Co., Dept. CP, 1005 S. Santa Fe Ave., Los Angeles 21, Calif. . . or for more information check CP 6636 on handy form, pages 2 and 3.)

Repairs floors without halting traffic flow

Floor repair material that eliminates ruts and holes in factory floors and driveways without delaying traffic is illustrated in 4-page folder. Repair material bonds to concrete, brick, stone, and asphalt. Surface can be used immediately after material is tamped down, according to manufacturer.

Bul "Stonhard Stonfast" is available from Dept. SF, Stonhard Co., Dept. CP, 1306 Spring Garden St., Philadelphia 23, Pa. When inquiring specify CP 6637 on handy form, pages two and three.)

Geared Power SIMPLIFIED WITH SYNCROGEAR



The motor that internally gears its speed

DON'T go to the expense of installing a gear box with extra coupling and guards to rig up slow speed for a motor. Install the U.S. Syncrogear motor and avoid extra contraptions. You'll simplify your power hookup, save space, eliminate hazards and give your driven machine the most efficient power. The U.S. Syncrogear motor was one of the first complete integral power units, introduced 22 years ago. It's backed by experience, tested and proved performance and engineering "know-how" that only U.S. MOTORS can offer to those seeking the most dependable geared motor power.

SYNCROGEAR ADVANTAGES

Compact—rugged—quiet	Pyramidal supporting base
No external gear box	Solid shank pinion
No extra coupling	Normalized castings
Internally-gear	Extra large oil reservoir
Single unit on one base	Asbestos-protected windings
Completely housed	In-a-line shaft
Reduced frictional losses	Neat, streamline appearance
Permanently-aligned parts	Drip-proof surface
Super-hardened gears	

U.S. SYNCROGEAR MOTOR 4 TO 10,000 RPM. 1/4 TO 30 H.P.



REQUEST FOR SYNCROGEAR MOTOR BOOKLET

U. S. ELECTRICAL MOTORS INC. CP-2
Box 2058, Los Angeles 54, Calif.
or Milford, Conn.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

When inquiring check CP 6638 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MAINTENANCE

Sheet metal cut easily with maneuverable power nibbler

Uses: For cutting sheet metal up to 18 gage iron and steel.

Features: Power nibbler fits any $\frac{1}{4}$ " electric or air drill. It will work on a drill press or a flexible shaft with $\frac{1}{4}$ " chuck. Detachable crank case is designed to permit



Nibbler fits any $\frac{1}{4}$ " electric or air drill. It works on drill press or flexible shaft with $\frac{1}{4}$ " chuck

construction of frames for special purposes. Change from circular to straight cutting can be made without removing lower slide block.

Description: Unit has been designed and constructed to make changing of tools exceptionally easy, according to manufacturer. Lower tool holder has same center line as upper holder and hand wheel makes a fine adjustment.

Range of materials that can be cut are: $\frac{3}{32}$ " cold rolled steel — continuous cutting ($\frac{1}{8}$ " on short cuts); $\frac{5}{64}$ " stainless; and $\frac{5}{32}$ " brass or copper. Largest circle nibbler will cut is $2\frac{1}{2}$ " diam — smallest is $2\frac{23}{64}$ " diam. Folds to $\frac{5}{64}$ " and beading to $\frac{3}{32}$ " plate thickness are said to be readily cut.

Dimensions of unit are 50" long x $31\frac{1}{2}$ " high x 13" wide, with throat depth of 28-17/32". The .65 hp electric motor provides ample power and is mounted directly behind crank case enclosed drive.

(Product of Nord International Corp., Dept. CP, PO Box 44N-31, Denville, N. J. . . . or for more information check CP 6639 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 6640 . . . see information request blank between pages 2 - 3.

COOPER ALLOY PRODUCTS HELP YOU

Relax!

You'll get a bigger kick out of the show or the game if you leave your plant worries at the office . . . and you'll have much less to worry about if you put Cooper Alloy's thirty years of experience to work for you. If sound stainless steel castings or reliable stainless steel fittings, valves and accessories can solve your problem, why not let us lighten your burden? Cooper Alloy products are produced to serve . . . use them with confidence, and relax.



COOPER ALLOY

THE COOPER ALLOY FOUNDRY CO. • HILLSIDE, N. J.
Los Angeles, San Francisco, Oakland, Houston, Chicago, Detroit, Philadelphia, Hartford
Leading producers of STAINLESS STEEL valves, fittings and castings

MY CRYSTAL-GAZING PAID OFF WITH THIS CENTRIFUGAL

AN **A.T.&M.**
SUCCESS STORY BY
SAM SPINNER



AMERICAN TOOL & MACHINE COMPANY
1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new A.T.&M. booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS.....

SAVE TIME, SPACE
AND COSTS WITH

A.T. and M.
CENTRIFUGING

Name.....Title.....
Company.....
Street.....
City.....Zone.....State.....

**FREE
ILLUSTRATED
BOOKLET**



When inquiring check CP 6641 on handy form, pgs. 2-3

MAINTENANCE

Redesign of rotating joint offers less weight, longer life...

unit needs no lubrication and is self-supporting

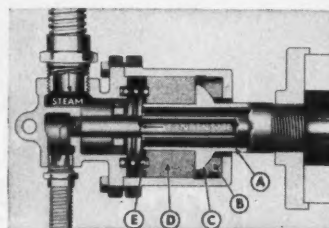
Uses: For admitting steam and other fluids into rotating rolls and cylinders of paper, textile, rubber, and similar machines.

Features: Redesign permits reduced bulk for unit—and gives less weight. Joint is completely self-supporting, designed for use where suitable supports cannot be provided, and for use where lateral movement is encountered. Unit shifts as roll shifts, is said to end danger of rapid wear or loss of operating efficiency that comes with misalignment.

Also, self-lubricating carbon graphite seal rings' effective thickness has been increased, providing an average of 25% longer life, according to manufacturer.

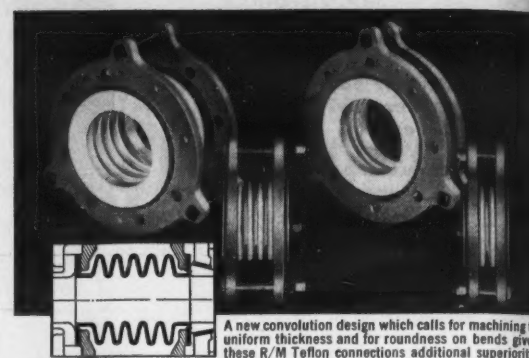
Description: Series 2000 Type S joints are available in a wide range of threaded nipple sizes, for pressures to 150 and 250 lb, and for 450°F maximum temperature. Both through flow and syphon pipe type are offered.

Design and construction of joint are shown in accompanying sectional illustration. Rotating member consists of one part, the nipple (A), which is attached to roll or cylinder. Nipple has a convex, hemispherical collar (C) which rotates against matching concave surface of carbon-graphite seal ring (B). Bearing surface of nipple rotates in a carbon-graphite guide



(D), which in turn is closely fitted into body. Spring (E) maintains an initial sealing pressure within joint.

(Rotating joint is a product of The Johnson Corp., Dept. CP, Three Rivers, Mich. . . . or for more information check CP 6642 on handy form, pages 2 and 3.)



R/M Teflon makes chemically impervious expansion joints and flexible couplings

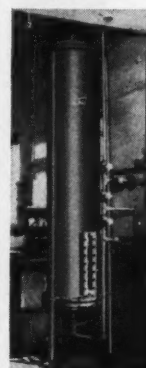
R/M Teflon Expansion Joints and Flexible Couplings show no reaction against chemicals; are unaffected by any known industrial acids and caustics; have no known solvent; have zero water absorption; and are unaffected by weather. The construction design diagrammed above enables them to absorb greater shock and vibration. A special tie rod arrangement prevents overexpansion of joints and bending of pipes. See your R/M distributor for full details.

*Du Pont's trade-mark for its tetrafluoroethylene resin

PACKINGS
RAYBESTOS-MANHATTAN, INC.
PACKING DIVISION, MANHEIM, PA.

When inquiring check CP 6643 on handy form, pgs. 2-3

Barnstead Mixed Bed Demineralizers



10 to 2500 Gallons or more per Hour

Sturdy construction and simplified design, plus a new, improved regeneration system make Barnstead Mixed Bed Demineralizers outstanding in performance.

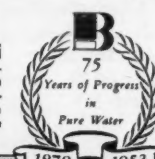
Easy to operate — easy to regenerate — they produce ion-free water at very low cost, and you get more gallons between regenerations.

Each unit complete with regenerant tanks, flow meter, pressure gage, purity indicator, and simplified regeneration. Steel columns lined with heavy sheet rubber.

WRITE FOR NEW
BULLETIN #126
on Mixed Bed Demineralizers



In 3 years of operation, this 500 gph Barnstead Demineralizer has produced over 4 million gals. of high purity demineralized water with a minimum of maintenance or attention.



66
LANESVILLE
TERRACE



FOREST HILLS
BOSTON 31
MASS.

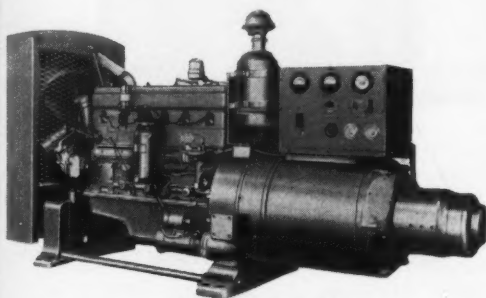
When inquiring check CP 6644 on handy form, pgs. 2-3

Ample overload, full rated 50,000 w at 80% power factor offered in electric plant . . .

engine delivers 104 hp at 1800 rpm, and has 450 cu in piston displacement

Uses: For any job requiring heavy duty primary or emergency stand-by power.

Features: Generator will deliver a full rated 50,000 w at 80% power factor with ample overload capacity. Gasoline engine delivers 104 hp at 1800 rpm and has a 450 cu in piston displacement. It is equipped with replaceable cylinder liners, roto exhaust valves, oil bath air cleaner, and a remote, 12 v starting system. Water cooling, full pressure oil lubrication with sump capacity of 9 qt and a low-pressure cutoff to protect engine are other features offered.



Furnished only in unboxed type

Description: Generator, Model 50KA, is drip-proof, direct-connected to engine for permanent self-alignment. It is said to have excellent motor starting characteristics. Voltage regulation is plus or minus two per cent. Improved brush rig design features constant-pressure brush springs.

Control box, mounted over generator, is equipped with a charge rate ammeter, electric water temperature gage, electric oil pressure gage, start-stop buttons, and running time meter. Automatic voltage regulator is installed inside control box.

(Electric generating sets are products of D.W. Onan & Sons, Inc., Dept. CP, University Ave. S.E. at 25th St., Minneapolis, Minn. . . or for more information check CP 6645 on handy form located between pages two and three.)

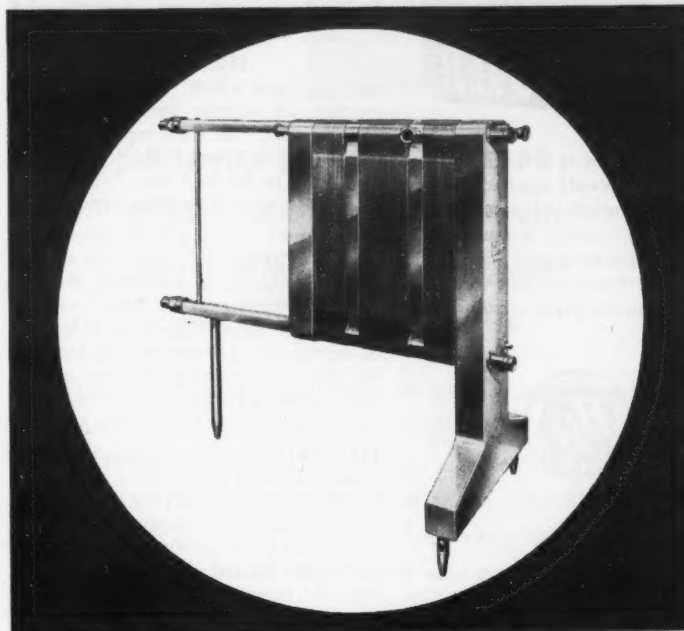
Comprehensive data on mixing and grinding equipment

Photographs, technical data, and comprehensive charts on jar and ball mills, mill jars, drum rollers and tumblers, drum painting equipment, and special mixing equipment, make this an aid to all users of mixing and grinding equipment.

Bul 270 is available from The U.S. Stoneware Co., Dept. CP, 5300 Talmadge Ave., Akron 9, Ohio. When inquiring specify CP 6646 located between pages two and three.

Announcing!

THE DE LAVAL PLATE HEAT EXCHANGER



FOR HEATING, COOLING and REGENERATION

The De Laval Separator Company announces its newest product—the De Laval Plate Heat Exchanger. Behind the De Laval Plate Heat Exchanger are many years of experience and successful performance, for it has been sold by the thousands in Europe and Canada where it is known as the Alfa-Laval Plate Heat Exchanger.

Throughout industry there are many processes that require the use of the Plate Heat Exchanger. The De Laval Plate Heat Exchanger offers a high heat transmission coefficient, ease of dismantling and cleaning, plus maximum heat recovery.

Simple, rugged design based on the principle of enlargement, the unit can be rebuilt or extended, as required. This feature will be fully appreciated in modern plants where adaptability is a major asset.

For complete information, please write and give us the details of your heating or cooling problem.

FEATURES OF THE DE LAVAL PLATE HEAT EXCHANGER

1. All heat-transmitting surfaces are accessible for inspection and cleaning.
2. Complies with sanitary requirements—designed for "in-place" cleaning.
3. Easy variation of assembly to meet changes in operation—plates are invertible (except Model P5).
4. Easy to assemble—special design for precision tightening—ball bearing tightening nuts with constant tension thrust washers.
5. Space requirements are small.
6. Unsurpassed heat transmission.
7. All parts which contact the liquid are made of highest quality acid-resisting stainless steel.
8. Heater, cooler and regenerative sections may be assembled in one unit.
9. Several liquids can be treated simultaneously in different sections of the same Heat Exchanger.
10. Liquid cannot leak from one section to another—liquid cannot become mixed with the heating or cooling medium.
11. Sturdy construction for high-pressure operation.
12. Gaskets are easily replaceable in the user's plant.
13. Highest quality instrumentation by Taylor Instrument Company.
14. Available in three sizes for a wide range of capacities.

De Laval PLATE HEAT EXCHANGERS

THE DE LAVAL SEPARATOR COMPANY • Poughkeepsie, New York • 427 Randolph St., Chicago 6
DE LAVAL PACIFIC CO., 61 Beale St., San Francisco 5

When inquiring check CP 6647 on handy form, pgs. 2-3

NEW "SNAP-ON" ONE PIECE PIPE INSULATION

BALDWIN-HILL MONO-KOVER

Baldwin-Hill MONO-KOVER is a flexible, featherweight pipe insulation easily applied by spreading at the seam, snapping around pipe and fastening with staples, bands or other fasteners. It is incombustible and moisture-proof—composed of fine mineral wool fibers bonded with phenolic resin and molded in one piece sections.



Easy To Install



- Extra Light Density
- Easily Cut and Fitted
- Six Foot Lengths
- Resilient, Flexible
- Won't Break or Crumble
- Easy to Paint
- Highly Efficient
- No Coarse Fibers
- Takes Rough Handling
- Effective Up To 350° F.
- Easily Nested
- Non-Corrosive
- Won't Rot, Decay, Mold
- Lower Applied Cost

Write For Complete Information

BALDWIN-HILL COMPANY

402 BREUNIG AVENUE • TRENTON 2, NEW JERSEY
Kalamazoo, Michigan . . . Huntington, Indiana . . . Temple, Texas

When inquiring check CP 6648 on handy form, pgs. 2-3

MAINTENANCE

Leakage of volatile gas prevented by materials in flexible hose

Uses: For carrying Freon gas in refrigeration systems. Hose is also recommended for carrying lacquers, lacquer solvents, naphtha, kerosene, and many chemicals.

Features: Hose is made with synthetic tube which prevents permeation of volatile gas. Manufacturer states that users report diffusion rate of Freon through Qua-Seal hose to be less than 5% of rate experienced with other types.

Description: Hose is reinforced with two layers of braided textile, and is designed to withstand the wide temperature range found on both the suction and discharge sides of refrigerator compressor. It can be used with working pressures as high as 400 psi. Hose is available in 1/4, 3/8, 1/2, 3/4, and 1" ID.

(Qua-Seal hose is a product of Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Dept. CP, 1932 Oliver Bldg., Pittsburgh 22, Pa. . . or for more information check CP 6649 located between pages two and three.)

Safety on masonry saws provided by reinforced abrasive blades

Uses: For use on masonry saws.

Features: Blade will readily take severe flexing, side pressures, and bumping while in operation, according to manufacturer. Safety feature is said to result from process that molds a strong center core of woven synthetic fabric.

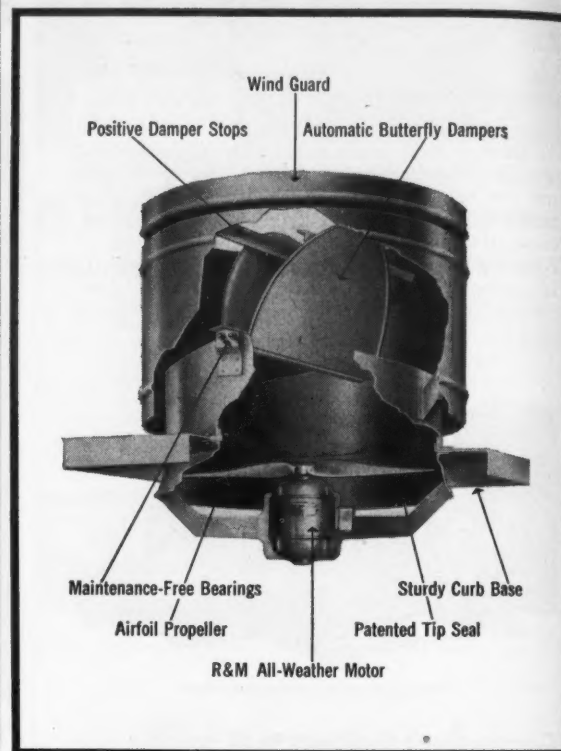
Description: A variety of specifications are available for the cutting of brick stone, concrete blocks, tile, and refractories. Cutting action is claimed to be very free, with blade giving longer life than other abrasive blades.

To simplify their use, Target Safety-Blade specifications are identified by color code: gold blades for hard materials; blue for medium; and red for soft, coarse, or abrasive materials.

(Masonry saw blades are a product of Robert G. Evans Co., Dept. CP, 6315 Brookside Plaza, Kansas City 13, Mo. . . or check CP 6650, pages 2 and 3.)

SKY-BLAST®

The Modern Power Roof Ventilator



Most economical way to expel heat, fumes, smoke

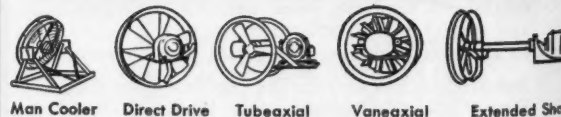
This modern power roof ventilator is backed by 20 years of research and engineering.

Famed airfoil propeller, powered by the All-Weather Robbins & Myers motor, sweeps up heat, moisture, dust, fumes—then *blasts them high into the outside air*. Wind guard and throat design assure constant performance regardless of wind.

Automatic butterfly dampers open wide on minimum fan pressure for guide vane effect and virtually unrestricted air flow. Galvanized roof over damper shaft and bearing supports provides rainshed when fan is not operating. Easily mounted on any type roof, Sky-Blast provides air deliveries up to 78,800 CFM. Low silhouette cuts down roof stresses. Our engineers will be glad to give you free advice on any ventilating problem.

Write for Catalog 680-C.

PROPELLAIR®
DIVISION OF ROBBINS & MYERS, INC.
SPRINGFIELD, OHIO



When inquiring check CP 6651 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Overnight refinishing for 'next day' operation permitted by line of quick-drying enamels

Uses: For metal and related wood surfaces.

Features: Brushed or sprayed, enamels are said to have unusual adhesive qualities, and dry in four hours. Quick-drying quality is said to permit overnight refinishing of machines for operation.

Description: Enamels combine fast drying with hardness and resistance to abrasion, weather, and wear. They are available in hard-gloss colors including brilliant blue, yellow, green, gray, orange, and red, and permit any standard color combination.

(Quick-drying enamels, Toconamel colors, are a product of Tropical Paint & Oil Co., Dept. CP, 1210-52 W. 70th St., Cleveland 2, Ohio . . . or for more information check CP 6652, pages 2 and 3.)

Presents monograph on weldability of steels

Copiously illustrated 381-page Fabrikoid leather covered book is monograph on the weldability of carbon and low-alloy steels. Early chapters cover fundamentals of welding processes and metallurgy. Next comes consideration of basic factors influencing weldability, after which are presented suggested methods for welding commonly used steels. Remaining chapters contain a review and critical evaluation of weldability tests and general conclusion.

Appendix has 50 pages of tables wherein all standard specification steels, such as ASTM, SAE, ABS and others are classified into three categories: 1) those which are readily weldable, 2) those in which some precautions are needed, 3) those which require special precautions and considerations. Exact welding procedures are indicated for each thickness of steel.

"Weldability of Steels" is available by remitting \$6.50 to American Welding Society, Dept. CP, 33 West 39th St., New York 18, N. Y.

Speed reducers, gear motors get comprehensive treatment

Comprehensive 103-page catalog contains installation views, hp ratings, cross-sectional drawings and parts list of all types of speed reducers.

Companion bulletin of 4 pages contains specifications and descriptive information on right-angle type gearmotors. Motors are 1/6 to 5 hp with ratios from 5 4/5:1 to 100:1. Output speeds are from 17.5 to 300 rpm.

Bul 250-A on right-angle type motors and Cat 50 on speed reducers are available from Abart Gear and Machine Co., Dept. CP, 4828 W. 16th St., Chicago 50, Ill. When inquiring specify CP 6653 on handy form, pages 2 and 3.

Introducing **AMERjet**

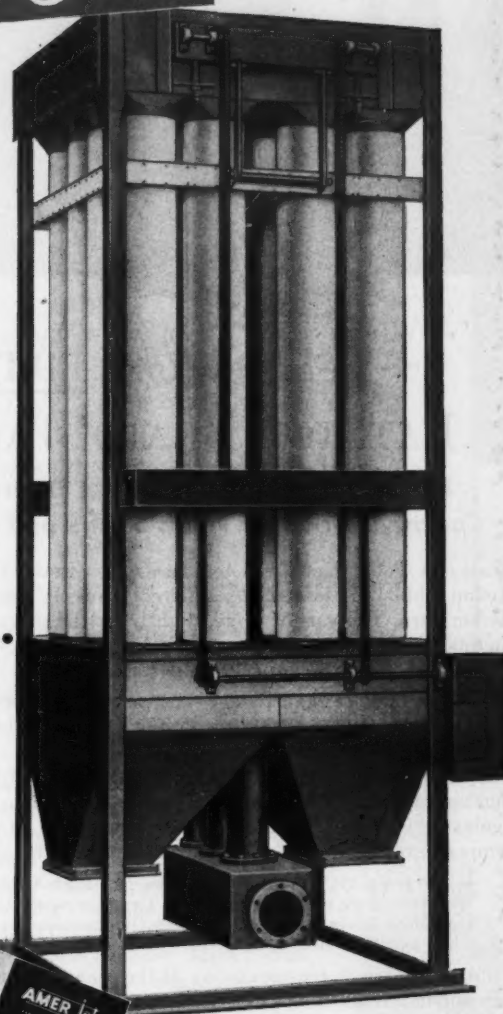
A better REVERSE JET TYPE FABRIC DUST ARRESTER built to exacting AAF design and performance standards

Just what you'd expect from the leader! American Air Filter has developed and field tested a fabric-type dust arrester incorporating the same basic concept and design features found in all AAF Dust Control Products, namely—*small space requirements; maintained performance over a wide range of operating conditions; constant exhaust volume; high collection efficiency.*

With these proven advantages established, AAF engineers then "iced the cake" with these additional features to further increase AMERjet's over-all efficiency—

- Tension control to compensate for variation in fabric dimensions due to humidity changes.
- Rugged, foolproof mechanism for dislodging collected material with high pressure jets.
- Venturi-shaped inlet for dust-laden air extends life of cloth by greatly reducing the abrading effect.

AMERjet is available for handling any exhaust volume.



For complete information on this new dry-type dust collector, call your local AAF representative or write direct for Bulletin No. 279.



American Air Filter

COMPANY, INC.

258 Central Avenue, Louisville 8, Kentucky • American Air Filter of Canada, Ltd., Montreal, P. Q.

When inquiring check CP 6654 on handy form, pgs. 2-3

NEW from Garlock!



All Teflon[†] Yarn LATTICE BRAID* PACKING

For Service Against the Most Destructive and Corrosive Acids on Pump Shafts and Valve Stems

THIS new Teflon packing is *not* just another braided packing made from Teflon ribbon. It is a *totally* different packing made from an all-new Teflon yarn. The yarn is woven tightly by the patented LATTICE BRAID method into a relatively dense, firm braid with no large voids. Garlock can furnish Teflon yarn packings in two styles—

No. 5883 LATTICE BRAID packing—composed 100% of Teflon yarn.

No. 5888 LATTICE BRAID packing—composed of 100% Teflon yarn and treated with Teflon suspensoid.

They are furnished in coil and ring form in sizes $\frac{1}{8}$ " to $1\frac{1}{2}$ ". Both packings are superior to any other types of braided Teflon packings for service against the *most* destructive or corrosive acids at high pressures and temperatures up to 500° F. For example, note this service report—

Duplex pump, $1\frac{1}{8}$ " shaft, $\frac{3}{8}$ " packing size, pumping sulfuric acid at 12,000 p.s.i. New Teflon yarn packing was installed. Customer reports that *after 1400 hours* they added 2 rings and are still operating. (Best prior service was 330 hours with a blue asbestos braided packing with Teflon suspensoid.)

Contact a Garlock representative at the sales office nearest you. Get his recommendations on the new Teflon yarn packings and on other Garlock Teflon products.

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK

Branch Offices: Baltimore • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Denver • Detroit • Houston • Los Angeles • New Orleans • New York City • Palmyra (N.Y.) • Philadelphia • Pittsburgh • Portland (Ore.) • Salt Lake City • San Francisco • St. Louis • Seattle • Spokane • Tulsa

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

*Registered Trademark. †du Pont's Trademark for its tetrafluoroethylene resin.



GARLOCK

PACKINGS, GASKETS, OIL SEALS
MECHANICAL SEALS
RUBBER EXPANSION JOINTS

When inquiring check CP 6655 on handy form, pgs. 2-3

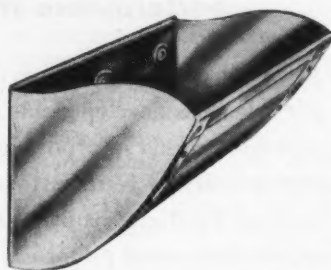
MAINTENANCE

Efficiency at any speed provided by steel elevator buckets

Uses: For handling any powdered or granular free-flowing material which is not excessively abrasive.

Features: Buckets are said to perform with equal efficiency at high, medium, or low speeds and are suitable for either replacement purposes or new installations in chain or belt elevators.

Description: Hi-Cap elevator buckets are made from heavy-gage cold rolled-steel. Durability and long life are assured by a rolled front lip of double thickness. Ends



Construction assures durability and long life

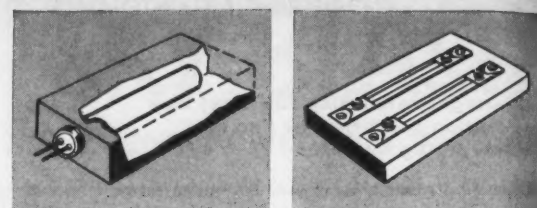
of bucket are formed to support body. Ends and body are spot-welded, removing shear stress from welds.

(Elevator buckets are a product of Fort Worth Steel & Machinery Co., Dept. CP, 3600 McCart, Fort Worth, Tex. . . . or for more information check CP 6656 on handy form, pages 2 and 3.)

Shows how to choose plating anodes

Full information on copper, lead, zinc, tin, tin-lead, cadmium oxide, and brass plating anodes is contained in 8-page catalog. Data on sizes, shapes, compositions and other characteristics are included.

Bul 141 is available from Federated Metals Div., American Smelting and Refining Co., Dept. CP, 120 Broadway, New York 5, N. Y. When inquiring specify CP 6657 on convenient Reader Service slip between pages two and three.



Heat surfaces conveniently, safely with versatile G-E Calrod* heaters

Wrapped around, cast in, clamped on or spaced away, long-life G-E Calrod heaters give you these surface heating advantages:

Convenience—localize heat right where you want it, on surfaces of all sizes.

Accuracy—thermostatic controls assure exactly the right temperature.

Versatility—sizes, shapes, and ratings are available for almost every need.

For complete information, see your nearby G-E Apparatus Representative or Distributor. And write now for this—

FREE APPLICATION BULLETIN

GEA-5097—"Heating Surfaces with Electric Heaters" Section 720-110, General Electric Company, Schenectady 5, New York.

*Reg. Trade-mark of General Electric Co.

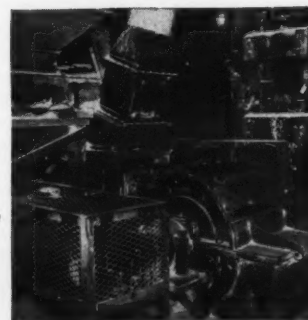
GENERAL ELECTRIC

When inquiring check CP 6658 on handy form, pgs. 2-3

MANUFACTURERS OF PROCESSING MACHINERY SINCE 1885

Well known Milling Company with SIX Gruendler 75 H. P. Super Master Grinders on the job, milling super product for Adhesives to the tune of over-100,000 pounds daily!

One of SIX No. 5 Master-Grinders at the Huron Milling Company, Harbor Beach, Mich.



Send in a small quantity of your material processed for Free Test Run by the Gruendler Laboratory.

WRITE FOR INFORMATIONAL BULLETINS ABOUT, — PULVERIZERS — MIXERS — BLENDERS

GRUENDLER

CRUSHER & PULVERIZER CO.

2915 North Market St. Dept. CP1 St. Louis 6, Mo.

When inquiring check CP 6659 on handy form, pgs. 2-3

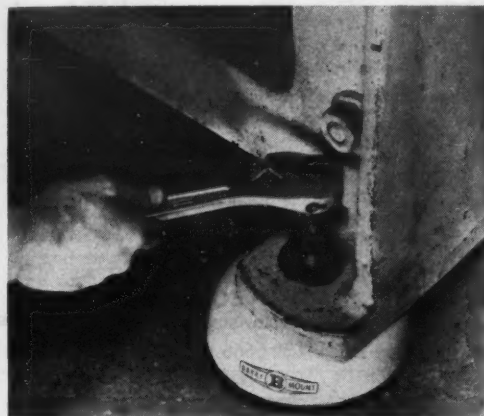
CHEMICAL PROCESSING

Heavy machinery stays put at lower installation and maintenance cost . . .

self-leveling mountings isolate vibration, decrease noise level

Uses: For mounting and leveling heavy machinery, without bolting or shims.

Features: Self-leveling mountings allow mobility of machine tools within plants. Since they eliminate bolting or cementing of machines to floor, installation and maintenance costs are cut. Mountings are engineered to isolate all vibration, to insure that machinery stays put.



Will carry up to 12,000 lb per mount

Description: Mounts lift a machine foot to required height for leveling by simple turn of attaching bolt. Series LM3 and LM5 mounts permit height adjustments up to $\frac{1}{2}$ " and carry loads up to 4200 lb per mount. Other isolators hold from one ounce to 12,000 lb per mount.

(Self-leveling machine mountings, Barrymounts, are products of Barry Corp., Dept. CP, 1000 Pleasant St., Watertown, Mass. . . or check CP 6660 on handy form, pages 2 and 3.)

Dolly-mounted air compressor is made for fast work on medium sized paint jobs

Uses: For spraying lacquer, synthetic enamels, or ordinary paints — mobile unit is made especially for fast work on medium sized paint jobs.

Features: Unit is mounted on a dolly for quick, easy handling in factories or industrial plants.

Description: Designed with a $\frac{1}{4}$ hp capacitor, 115 v motor and 7-gal welded steel tank, Portair unit has a welded steel dolly with rubber wheels.

(Mobile air compressor is a product of Pariser Machinery Corp., Dept. CP, 165-7 Centre St., New York 13, N.Y. . . or for more information check CP 6661 on handy form, pages 2 and 3.)

No Seat Leakage Through This Valve

...on Hot Wax Service, for instance

THE INSTALLATION



In the wax unit of a leading Gulf Coast lube oil plant, with Crane Steel Gate Valves in hot wax lines to slabbing machines.

THE CASE HISTORY

The steel valves originally installed here were hindering maximum wax production. The chilling cycle was slow—rejects for remelting were high. The trouble was that the shutoff valves were leaking, and hot wax was getting into the presses during the chilling cycle. Yet the valves were comparatively new.

There's been no such trouble since Crane No. 47X, 150-Pound Gates were installed more than 2 years ago. Their Crane Exelloy trim, suited for temperatures up to 1000 deg. F. keeps giving a tight shutoff on the hot wax, month after month, with easy operation. And they've done so with but routine attention, ever since installed. Better quality is always the bigger value, as every thrifty valve buyer knows.

THE BETTER QUALITY... BIGGER VALUE LINE... IN BRASS, STEEL, IRON

CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 6662 on handy form, pgs. 2-3

VALVE SERVICE RATINGS

SUITABILITY:

Best for the job

FEATURES:

Outstanding Exelloy trim

MAINTENANCE COST:

Routine care only

SERVICE LIFE:

Good as new—after more than 2 yrs.

OPERATING RESULT:

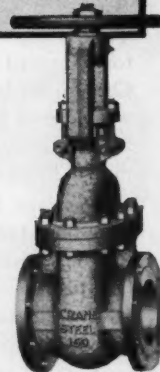
No production lost to valve trouble

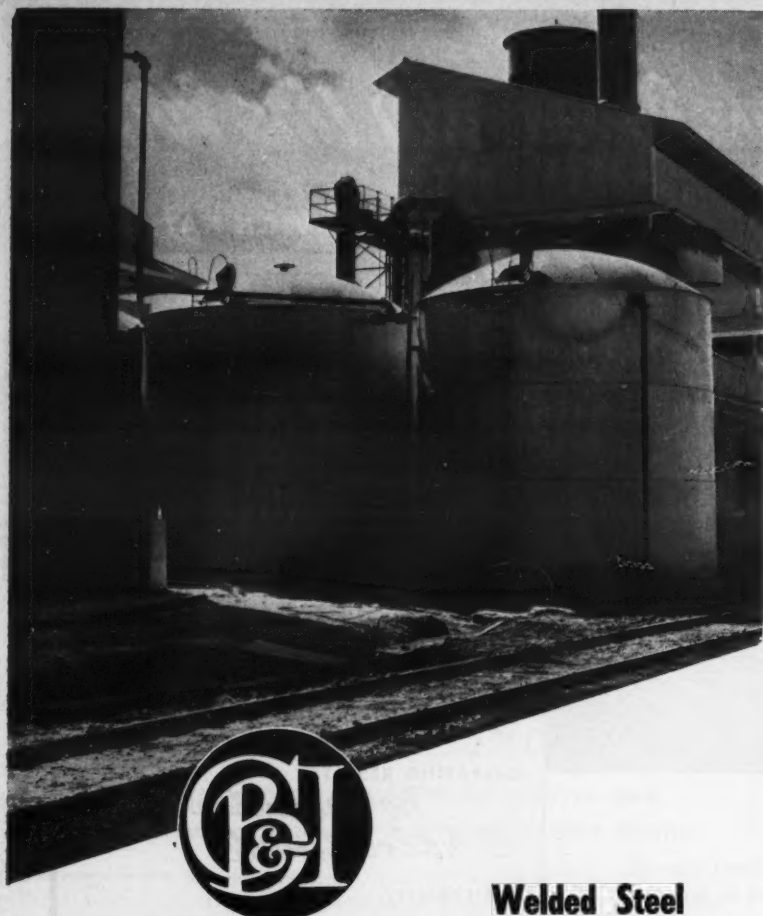
AVAILABILITY:

Regular Catalog item—No. 47X

THE VALVE

Workhorse of the petroleum industry—Crane 150-Pound Steel Gates—with exceptional performance assured by Crane quality design—Crane pioneering in steel casting—and the high adaptability of Crane Exelloy trim for most petroleum services. Sizes 2 to 24 in.; screwed, flanged, welding ends. See your Crane Catalog or your Crane Representative.





Welded Steel Structures Help Solve Industries Storage Problem

Today's improved manufacturing methods and processes often call for improved or increased storage as well. When such is the case, Chicago Bridge & Iron Company can come to the rescue . . . with welded steel plate structures like the two 20-ft. diam. by 18-ft high flat-bottom tanks shown above. These two tanks are located at the St. Regis Paper Company's, Cantonment, Florida mill.

Chicago Bridge & Iron Company has complete facilities for designing, fabricating and erecting structures built of carbon steel, corrosion-resistant metals, clad-steels and alloys. We also have facilities for stress-relieving, x-raying and pickling and painting fabricated steel plates by the Horton phosphoric acid process.

When planning welded steel plate structures — of carbon steel, stainless steel or alloys — write our nearest office for estimates, or quotations. There is no obligation on your part.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3 2107 Healey Bldg.	Los Angeles 17 . 1536 General Petroleum Bldg.
Birmingham 1 1533 North Fifth St.	New York 6 3314—165 Broadway Bldg.
Boston 10 1007—201 Devonshire St.	Philadelphia 3 . 1650—1700 Walnut St., Bldg.
Chicago 4 2116 McCormick Bldg.	Pittsburgh 19 3208 Alcoa Bldg.
Cleveland 15 2212 Midland Bldg.	Salt Lake City 4 507 West 17th South St.
Detroit 26 1335 Lafayette Bldg.	San Francisco 4 1545—200 Bush St.
Havana 402 Abreu Bldg.	Seattle 1 1307 Henry Bldg.
Houston 2 2151 C & I Life Bldg.	Tulsa 3 1649 Hunt Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 6663 on handy form, pgs. 2-3

MAINTENANCE

Dense, tough Teflon sheets have many applications

Uses: Sheets find application as gaskets, valve seats, diaphragms, and wherever high density and low porosity are required.

Features: Teflon sheets are said to offer extremely low porosity, high density, high tensile strength, and super-smoothness.

Description: Sheets are approximately 29 x 29" and are available in any thickness from .050 to 2".



Teflon sheets offer high density, low porosity

Stress relieved sheets are also available for applications where highest dimensional stability is required, particularly at high temperatures.

(Product of Ethylene Chemical Corp., Dept. CP, 245 Broad St., Summit, N.J. . . . or for more information check CP 6664 on handy form, pages 2 and 3.)

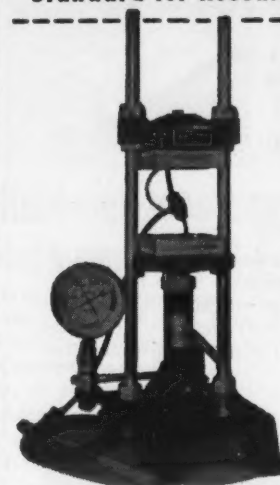
Details and features of centrifugal pumps

Sectional drawings, installation views and 2-page interchangeability-of-parts chart make up bulletin on medium pressure multi-stage centrifugal pumps.

Units described are specifically designed for boiler feed, refinery, process work, and mine pumping services. Pressures from 300 to 1000 psi with capacities to 7000 gpm are handled.

Bul 7251 is issued by Ingersoll-Rand Co., Dept. CP, 11 Broadway, New York 4, N. Y. When inquiring specify CP 6665 on handy form, pages 2 and 3.

Standard for Research and Development



the CARVER LABORATORY PRESS



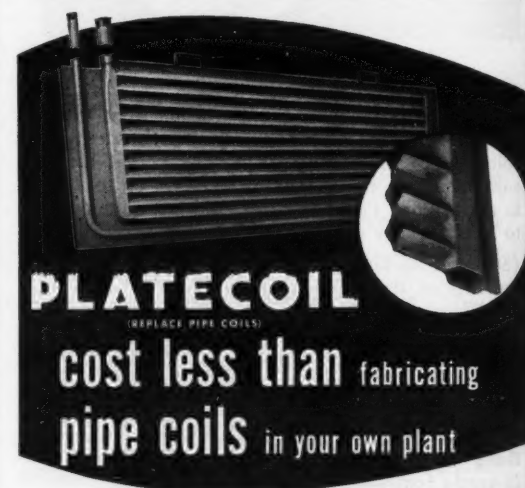
... wherever Pressing is required.

Accurately controlled pressures to 20,000 lbs.; 6-inch gauge mounted on base. Carver Standard Accessories include Electric or Steam Hot Plates, Carver Test Cylinders, Swivel Bearing Plates, Cage Equipment. Available from stock. Write for catalog.

FRED S. CARVER INC. HYDRAULIC EQUIPMENT

52 RIVER ROAD, SUMMIT, N. J.

When inquiring check CP 6666 on handy form, pgs. 2-3



PLATECOIL

(REPLACE PIPE COILS)

cost less than fabricating pipe coils in your own plant

You can buy Platecoils for less money than it costs to fabricate pipe coils in your own plant. You also save critical steel because Platecoils require less than 1/2 the steel used in pipe coils of the same surface area. Installation takes far less time as Platecoils are mounted on simple hangers instead of the complicated racks needed for pipe coils. They take 50% less space.

Send for complete technical manual and descriptive Bulletin No. P54

PLATECOIL
Division
Tranter Mfg. Inc.
LANSING 4, MICHIGAN

When inquiring check CP 6667 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Direct and gear driven styles offered in line of portable fluid agitators, mixers

Uses: For fluid mixing or agitating applications.

Features: Line of portable units includes both direct and gear driven styles. Agitator shaft bearings are pre-lubricated and sealed for life.

Description: Sizes range from $\frac{1}{4}$ to 3 hp in 1750, 1150, and 420 rpm. On slow speed units gears are oil lubricated and integral with motor rather than agitator shaft; a mechanical seal is used to eliminate oil leakage.

Clamp is full-swivel type made of high tensile aluminum alloy. A complete line of mounting accessories is available for shaft and propeller assemblies.

(Fluid agitators and mixers are a product of Chemineer, Inc., Dept. CP, 511 W. Second St., Dayton 2, Ohio . . . or for more information check CP 6668 on handy form, pages 2 and 3.)

Increased wear properties offered in bearing alloy with hardness and impact resistance

Uses: As a bearing overlay material.

Features: Structure of deposit obtained with rod, after short heat treatment, is said to show wear resistance several times greater than that of conventional bronze welding rods or electrodes.

Description: Frix is a mixture of soft mass with embedded crystals of long-wearing resistant copper alloy, thus combining both impact resistance and hardness. Rod's deposits also possess elasticity and lubricating properties provided by lower melting alloys included in formulation.

Material permits use of film-like deposit which can be heated to secure maximum performance characteristics, and which results in an integrated bearing.

(Bearing alloy is a product of Eutectic Welding Alloys Corp., Dept. CP, 172nd St. and Northern Blvd., Flushing, N. Y. . . . or for more information check CP 6669 on handy form, pages 2 and 3.)

Heating of hot blast stoves with fuel oil burner

Catalog sheet describes fuel oil burner which is said to save time and labor when used for initial heating of hot blast stoves where gas is not available. Fuel oil burning capacity of main burner of unit ranges from 60 to 450 gph, depending on oil and steam or air pressures available. Required operating pressures are 40 to 150 psi for steam or air, and from 25 to 100 psi or more for oil.

Cat 457 is available from Hauck Mfg. Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. When inquiring specify CP 6670 on handy form, pages 2 and 3.



OF THE



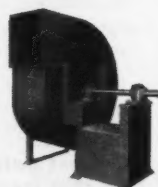
ARE USERS OF

CLARAGE

AIR HANDLING EQUIPMENT



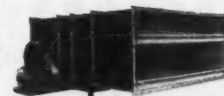
Fans for ventilation and air conditioning



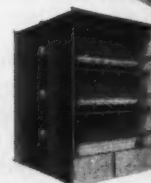
Fans and blowers for industrial services



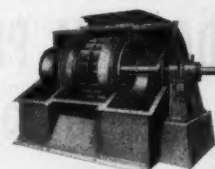
Cast iron fans for special industrial applications



Multitherms — complete "package" air conditioning units



Air Washers for air cleaning and purification



Equipment for forced and induced draft service



Ready-to-run units for light-duty ventilating

*** Manufacturing companies reporting assets of more than ONE BILLION DOLLARS are users of Clarage air handling equipment.**

Wherever you are, you're close to a Clarage application engineering office . . . close to expert assistance that means satisfactory results accomplished MORE economically.

In every state and in many foreign countries as well, those who specify and those who use like our equipment. Clarage specializes — we build air handling and conditioning equipment exclusively.

You can have faith that a Clarage unit is figured RIGHT for the required performance . . . built RIGHT to operate year after year with minimum attention.

Try us. You'll be in good company, as you can see!

CLARAGE FAN COMPANY, Kalamazoo, Mich.

You can Rely on . . .

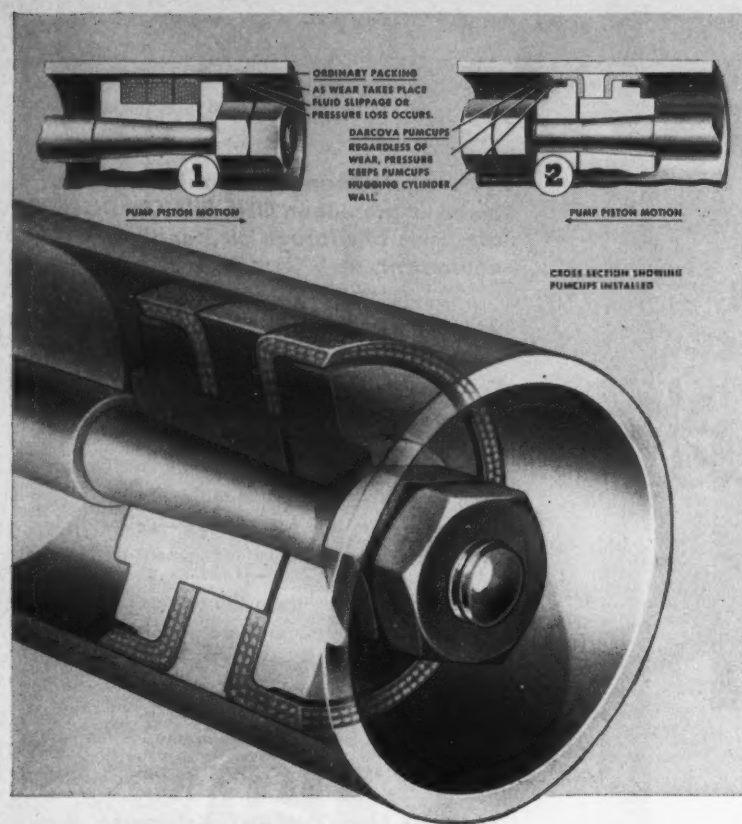
CLARAGE



Headquarters for
Air Handling and
Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

When inquiring check CP 6671 on handy form, pages 2-3



DARCOVA PUMCUPS mean EFFICIENCY to cost-minded engineers!

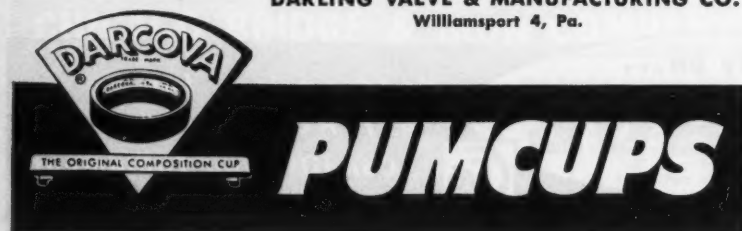
IN air and hydraulic cylinders and reciprocating pumps Darcova Pumcups actually retain full efficiency throughout their life span... and they outlast most other packings at least 3 to 1!

Special texture engineering plus the Darcova Pumcup principle makes it possible for Pumcups to hold their peak volumetric efficiency. Moreover, Pumcups per-

mit equipment to be operated at reduced speeds, save power, prolong equipment life and eliminate the need for frequent replacement shutdowns.

For less maintenance and lower operating costs find out more about Darcova Pumcups. Write for Bulletin No. 4502 on Pumcups for air or hydraulic mechanisms, Bulletin No. 4401 on Pumcups for reciprocating pumps.

DARLING VALVE & MANUFACTURING CO.
Williamsport 4, Pa.



When inquiring check CP 6672 on handy form, pgs. 2-3

MAINTENANCE

Continuous duty service possible with bronze water pump

Uses: Designed to meet continuous water recirculation requirements.

Features: Bronze pump uses sealed permanently lubricated ball bearings. Pressed fit of stainless steel shaft into inner ball bearing race restricts lateral movement of rotor, minimizing end thrust wear



Pressure range is from 0 to 75 psi

within pump. Continuous 5000 hr test with water at 40 lb pressure, utilizing design principles of pump, is said to have produced no measurable wear in Hy-Car rubber rollers or pump case.

Description: Model 4300 pump impeller is self-lubricated by water. Pressure range is from 0 to 75 psi. Pump is furnished with 3/4" ports and will deliver approx 7 gal/min @ 50 lb pressure and 1750 rpm.

(Water pump is a product of Dept. KP, Hypro Engineering, Inc., Dept. CP, 404 N. Washington Ave., Minneapolis 1, Minn. . . or for more information check CP 6673 on handy form, pages 2 and 3.)

Present data card on clad steels

Conversion tables and theoretical weights for clad steel plates are conveniently assembled on an information card now available. Also included are conversion factors to determine weight of solid alloys, or certain non-ferrous plates.

Clad steel data card is issued on letterhead request to Marketing Service, Lukens Steel Co., Dept. CP, Coatesville, Pa.

New Truck-loading . . . Batch Type

Despatch CHEMICAL DRYING OVEN



- For drying chemicals loaded in pans
- Continuous exhaust of recirculated air
- Complete removal of explosive volatile
- Available for gas, electric or steam
- Optional equipment includes loading truck, extra shelves, timed exhaust, special controls and larger capacities

Send for
Bulletin V-39

Wherever there are large batches of chemicals for finish-baking, curing, aging, dehydrating or preheating—the Despatch No. V-39 is the answer. Big pay load capacity. Takes a truck loaded with a dozen or more pans 48" long, 34" wide on 4" centers. Specially arranged horizontal ducts provide a uniform, high volume blast of air over and under each pan for thorough drying. The No. 1 time control exhaust system controls the air intake on the oven so that there is 500 CFM exhaust at 500°F with the air intake wide open, and 150 CFM exhaust at 500°F—after the time control system has actuated shutting off the air intake. Overall size 68"x8'8".

DESPATCH 343 Despatch Building
Established 1902 MINN. CO. Minneapolis 14, Minnesota

When inquiring check CP 6674 on handy form, pgs. 2-3

King MANOMETERS

Every Size — for Every Service

U-Type Manometers	
<ul style="list-style-type: none"> • Single Cleanout • Single Gland-Packed • Double Cleanout • Double Gland-Packed • High Pressure 	Low in price Trouble-free Easy to install and read
Well-Type Manometers	
<ul style="list-style-type: none"> • Low Well • Raised Well • Barometric Reading 	Stay clean longer Easy to service
Multi-Tube Manometers	
<ul style="list-style-type: none"> • Multi-Well • Common-Well • Special-Purpose 	
FREE LITERATURE gives sizes, construction and prices. Write today! And ask for informative 12-page Manual on Manometers.	

KING ENGINEERING PRODUCTS include King-Gages — Manometers — Self-Closing Push Valves — Pressure Transmitters — Sight Feed Bubbler — Overflow Check Valves — Air-flow Snubbers — Sediment Traps — Moisture Indicators

KING ENGINEERING CORP.
Box 270 • Ann Arbor, Mich.
REPRESENTATIVES IN PRINCIPAL CITIES

When inquiring check CP 6675 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Wireless intercom line noise minimized by "sonic gate"

portable 2-station system plugs into any outlet; requires no cables or wiring

Noise-free wireless intercommunication is offered in a two-station system that plugs into any electrical outlet. What is termed a "sonic gate" circuit suppresses line noises and hum while the system is in actual operation as well as when it is in stand-by position. Designed for emergency or temporary requirements, individual stations can be moved quickly from place to place. It is unnecessary to operate any controls while dictating or being permanently "tuned-in".

More stations can be added to this wireless system and all will be able to receive messages transmitted from any point. This meets requirements for communication where permanent installations may not be practical.

(LC-33 wireless intercommunication system is built by Talk-A-Phone Co., Dept. CP, 1512 S. Pulaski Rd., Chicago, Ill. . . . or for more information check CP 6676 on convenient Reader Service slip, pages 2 and 3.)

Hard-to-get-at places inspected easily with precision-built magnifying instrument

Uses: Instrument is designed for accurate and effective illumination and inspection of "close" places.

Features: Overall length of instrument is 17". It has a maximum reach of 14½". Minimum opening that will receive instrument is 7/8" diam (without bulb guard).

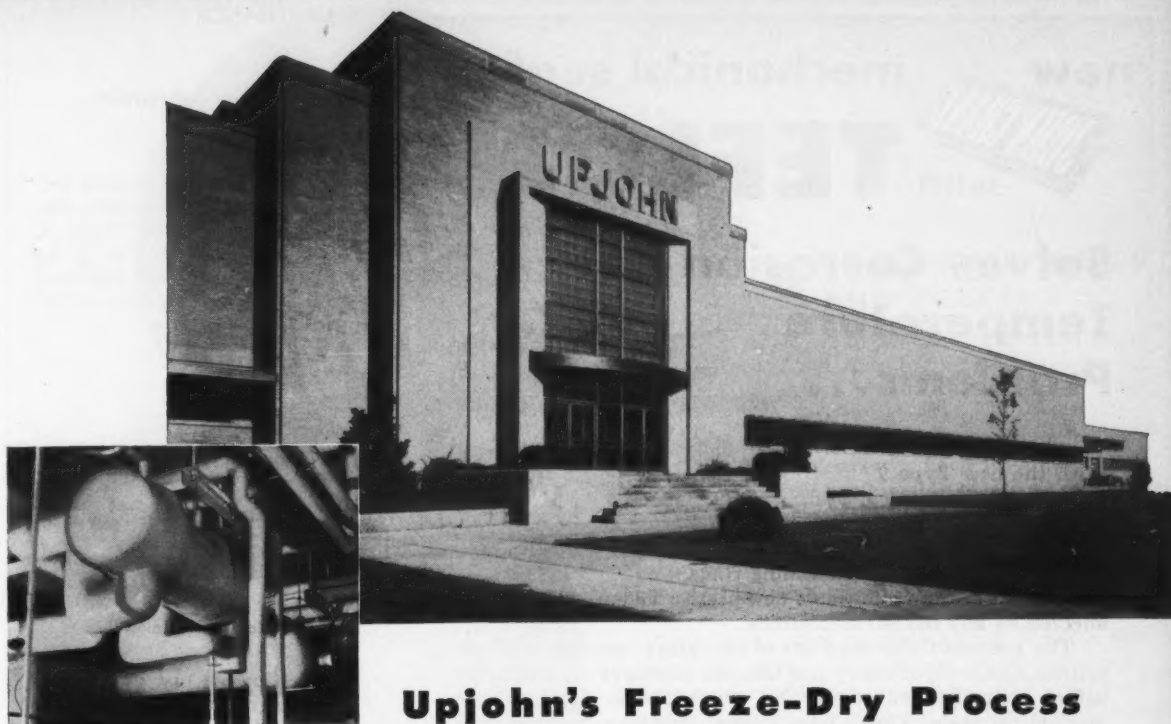
Description: This 5X power magnifying Inspecto-Scope is precision-built. Exposed metal surfaces are nickel-plated. Illumination is furnished by a 1.5 v bulb and standard 1.5 v dry battery. Light switch



Will fit openings of 7/8" diam

is on body of instrument. Light-carrying tube revolves 360°, with click-stop control. Instrument comes equipped with battery, battery cable, bulb and hardwood carrying case.

(Inspecto-Scope is a product of Badger Sales Co., Inc., Dept. CP, 2251 W. Pico Blvd., Los Angeles 6, Calif. . . . or for more information check CP 6677 on handy form, pages 2 and 3.)

**Upjohn's Freeze-Dry Process**

uses Acme units to reach -100° temperatures

The men at Upjohn coined a new term for Acme's Dry-Ex Chiller when they explained how it was used in their freeze-dry process of manufacturing multiple vitamin products and blood plasma. They call the Dry-Ex a "de-super heater" because it is helping them reach temperatures of a minus 100 degrees.

The function of the Dry-Ex in this amazing process is to use Freon-22 to cool Freon-13. This super-cooled refrigerant is then passed through an Acme Heat Exchanger and into a vacuum

unit where liquids are being changed to powders through a sublimation process. Vials of liquids frozen into solid blocks are placed in a near vacuum and subjected to minus 100 degree temperatures. The result is evaporation without moisture (sublimation) as the frozen solids change to powder form. Proof that Upjohn is satisfied with the performance of the Acme units in the system is obvious when you count the number of freeze-dry units in their giant Portage Road plant. There are 15 of them all using an Acme Dry-Ex and an Acme Heat Exchanger.

**ACME INDUSTRIES, INC.**

Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment

JACKSON, MICHIGAN



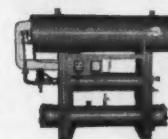
Evaporative Condensers
Cooling Towers
Floor-type Unit Coolers



Direct Expansion
(Dry-Ex) and Flooded
Liquid Chillers
Heat Exchangers,
Oil Separators



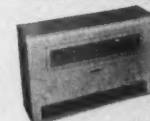
Shell and Tube, Shell
and Coil Condensers
Receivers, Pipe Coils



Packaged Liquid
Chillers to 225 tons



Flow-Temp Heat
Pumps
Flow-Cold Liquid
Chillers



Remote Room
Conditioner

Continuously serving the air conditioning and refrigeration industry since 1919

When inquiring check CP 6678 on handy form, pgs. 2-3

new mechanical seal JOHN CRANE with **TEFLON***

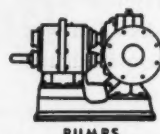
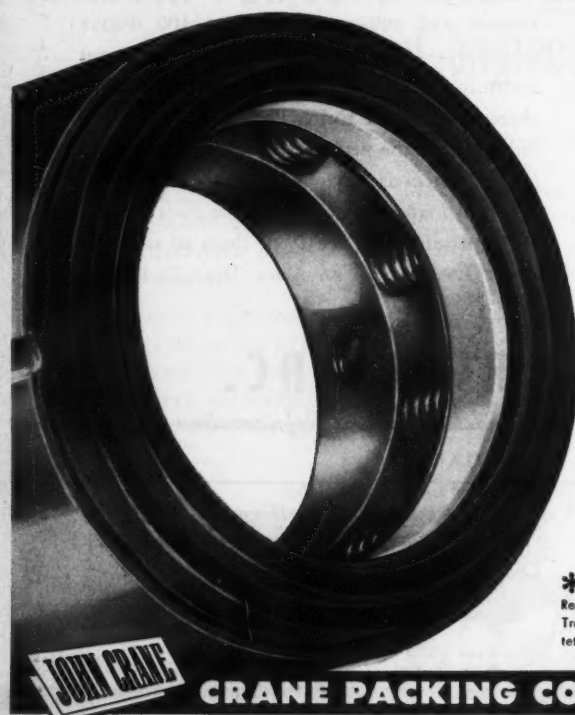
Solves Corrosion and Temperature Problems...

With the new Type 9 John Crane Mechanical Seal, proper sealing of chemicals and corrosive liquids is no longer a factor. Its flexible wedge and sealing rings are molded of the remarkable new plastic Teflon, which is not affected by any industrial chemical.

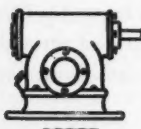
The successful development of two years research and field testing, this revolutionary seal handles corrosive liquids never before controlled effectively by conventional, flexible type mechanical seals. Thus, John Crane designing experience is effectively combined with the unique properties of Teflon: chemical inertness, extremely low friction and high heat resistance. Type 9 Seal can be employed at temperatures up to 500°F.

WRITE TODAY FOR NEW BOOKLET

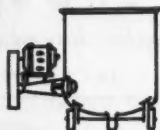
describing the John Crane Type 9 Shaft Seal. Crane Packing Co., 1821 Cuyler Ave., Chicago 13, Illinois.



PUMPS



SPEED REDUCERS.



MIXERS AGITATORS

*
Registered DuPont
Trade-mark for
tetrafluoroethylene resin

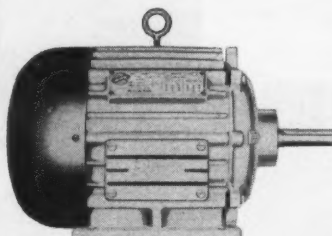
JOHN CRANE
CRANE PACKING COMPANY

When inquiring check CP 6679 on handy form, pgs. 2-3

MAINTENANCE

Announce line of motors, totally-enclosed, fan-cooled

Manufacturer has announced production of a totally-enclosed, fan-cooled motor. Unit, Type E, is available in ratings of 3/4 hp at 900 rpm to 20 hp at 3600 rpm in NEMA frame sizes 224 to 326 inclusive.



Supplied for any mounting

Features include cast iron frames with integral feet, integrally cast fins providing extra heat dissipation, pre-lubricated sealed ball bearings, and cast aluminum fan furnishing high velocity air over cooling fins.

Electrical characteristics of unit are 2 or 3-phase, all standard frequencies and commercial voltages below 600 v, as required.

Motors can be supplied for vertical, wall, or ceiling mounting, as well as standard horizontal floor mounting.

(Type E electric motor is a product of Dept. 202, The Lima Electric Motor Co., Dept. CP, Lima, Ohio . . . or for more information check CP 6680 on handy form, pages 2 and 3.)

Cellular glass insulation advantages explained

Short folder shows physical properties of cellular glass insulation and lists sizes and shapes. Thicknesses required for temperatures ranging from -50° to 800° F are recommended and specifications listed. Insulation is waterproof, incombustible, and acid proof.

Bul 101 is issued by Pittsburgh Corning Corp., Dept. CP, One Gateway Center, Pittsburgh 22, Pa. When inquiring specify CP 6681 on handy form, pages 2 and 3.

cut costs · clean efficiently cold steam



✓no back splash
✓blasts stubborn dirt
✓harmless to finest finish

HYDRO-AIR PRESSURE WASHER \$9.95

Connects to regular air and hot or cold water supply. Precise control of air and water blasts heavy dirt and grease or rinses sheets and small parts with a penetrating spray.

widely used in these industries:

Air Craft
Automotive
Bakeries
Breweries
Cement
Ceramics
Cheese
Construction

Distilling
Electrical
Food
Processing
Foundries
Jewelry
Leather
Meat Packing
Machine Shops
Marine
Mining
Equipment
Oil & Refinery
Optical
Paper
Pharmaceutical
Public Utilities
Repair Services
Railroad
Rubber

D & M PRODUCTS, INC.

30 North Raymond Avenue • Pasadena 1, California

Inquiries specially invited from industrial cleaning compounders interested in re-sale.

Ship Building
Stone Polishing
Textile
Tobacco
Transportation

When inquiring check CP 6682 on handy form, pgs. 2-3



CRV
CENTRIFUGAL
PUMPS

RIGHT for the job!

... in process pumping service

Ingersoll-Rand Class CRV pumps are ideally suited for evaporator and general circulating service in the process industries. Where corrosive liquids are involved, stainless steel construction can be furnished. All CRV pumps can be equipped with the Cameron Shaft-Seal - completely eliminating your stuffing box problems.

Part of a complete line of I-R pumps for the processing industries, the CRV is built in sizes from 1 to 6 inches, for capacities to 2600 gpm and heads to 500 feet. Ask your I-R representative about the real economy that these pumps can bring to your processes.

Ingersoll-Rand

714-10

11 Broadway, New York 4, N. Y.

Pumps, Compressors and Vacuum Equipment for the Process Industries



When inquiring check CP 6683 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Bond of 3000 psi produced by easily-applied adhesive . . .

has particular application in those industries where fire hazard prevents safe welding

Uses: For joining similar or dissimilar metals or materials. Adhesive has particular application in industries where fire hazard prevents safe welding.

Features: Easily-applied, quick-setting adhesive is said to produce a bond of 3000 psi.

Description: Material is said to have holding power comparable to that of metal welds, and can be made to set in ten minutes with only clamps required for successful application. No high temperatures or electric current are required.

(Adweld adhesive is a product of Miracle Adhesives Corp., Dept. CP, 214 E. 53rd St., New York 22, N. Y. . . . or for more information check CP 6684 on handy form, pages 2 and 3.)

Waterproofs and fireproofs roofs both old and new

Roof resurfacer which waterproofs and fireproofs old or new roofs has been announced by manufacturer. Material consists of a bituminous resin suspended in liquid chemicals. It contains no drying oils and has a melting point in excess of 200°F, manufacturer reports.

Furnished in drums, ready to use, material is easily applied and is reported not to run, crack, check or peel in hot or cold temperatures. This non-flammable coating is said to adhere to horizontal or vertical surfaces, or to damp or dry surfaces. Material may be applied by spray, brush, or mechanical applicator.

(Meco Nuplastik Roof Resurfacer is a product of Maintenance Engineering Co., Dept. CP, 16 W. Johnson St., Philadelphia 44, Pa. . . . or for more information check CP 6685 on handy form, pages 2 and 3.)

Chemical-resistant coating case histories

A number of case histories and product information on manufacturer's chemical-resistant coatings are given in 4-page illustrated folder. These Ferrolastic coatings are made with an Epoxy base—Epichlorhydrin-Bis, Phenol resin. Material is said to be remarkably hard and yet is flexible. Resistance to acids, alkalis, solvents, and normal abrasion is provided by finishes.

Folder, "Ferrolastic Chemical Resistant Coatings" is issued by Dept. C/R McDougall-Butler Co. Inc., Dept. CP, 2929 Main St., Buffalo 14, N. Y. When inquiring specify CP 6686 on handy form, pages 2 and 3.

Don't
Forget to
SPECIFY
REVERE



CONDENSER TUBES AND PLATES

Year after year users of condenser tubes and plates specify Revere, not only for new equipment, but when re-tubing. You might consider this fact if you are not as yet a Revere customer.

Correct specification is vitally important, because conditions vary so greatly. Each installation presents an individual combination of factors, each one of which should be studied before deciding on the proper alloy. It is often advisable to make a new survey of the situation before re-tubing, because the nature of the cooling water may have changed, or other service alterations have taken place.

To find the alloy or combination of alloys best suited to meet a specific set of circumstances, Revere offers the help of its Research Department, made available through the Technical Advisory Service. Working with the country's leading users of condensers and heat exchangers, these capable consultants have helped solve many and varied types of problems, leading to longer tube life.

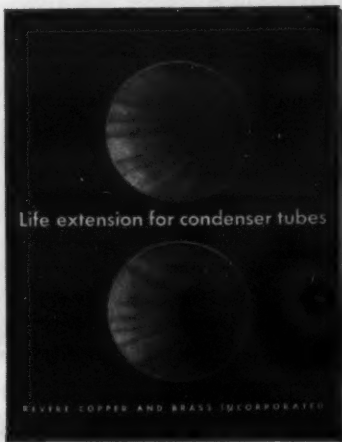
Revere makes tubes and tube sheets in all the customary alloys. See the nearest Sales Office.

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.
SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

This 28-page booklet is of unusual interest in these times when it is more important than ever to squeeze every last day of use out of condenser and heat exchanger tubes. It includes data on various copper alloys, photos of different types of condenser tube corrosion, and photomicrographs of the grain structure of different metals under varying operating conditions. Write on your firm's letterhead for your free copy. Ask for "Life Extension for Condenser Tubes."



When inquiring check CP 6687 on handy form, pgs. 2-3

DURAMETALLIC Packings

IT PAYS IN MANY WAYS

To use Durametallic — the packing that is custom-built for your particular need. Durametallic packing provides better sealing, longer runs and less friction on your rods, shafts and stems.

Write Today

For File No. DMCP covering Durametallic and Dura Plastic Packings.



DURAMETALLIC
KALAMAZOO



CORPORATION
MICHIGAN

MANUFACTURERS OF METALLIC and SEMI-METALLIC PACKINGS
ROTARY MECHANICAL SEALS and PACKING TOOLS

When inquiring check CP 6688 on handy form, pgs. 2-3

SAYS STOP TO SOLIDS



Yarway
Fine Screen Strainers prevent rust, scale and dirt from clogging mechanical equipment. Screens of woven Monel wire, bodies and screen caps cadmium plated. Made in 10 sizes — 1/4 to 3". Sold by over 200 industrial distributors. Bulletin S-203.

YARWAY STRAINERS

YARNALL-WARING CO., 125 Mermaid Ave., Philadelphia 18, Pa

When inquiring check CP 6689 on handy form, pgs. 2-3

MAINTENANCE

Pump mounting problems eliminated by bracket on close-coupled unit

Uses: Close-coupled pump motor is designed specifically for use with centrifugal pumps.

Features: Motor eliminates shaft alignment or pump mounting problems by supporting pump on its NEMA style "C" registered mounting bracket. A step shaft, with special diameter, shoulder, and tapped hole for mounting impeller, is ground for precision assembly and sealing against leakage.

Description: Close-coupled pump motors, type SCB, are available in ratings as high as 60 hp. Grease lubricated ball bearings permit vertical, horizontal, or any intermediate angle installation. Bearings are said to be ample to carry thrust.

Solid, closed flange on adaptor bracket prevents entrance of pumped liquid into motor. To further effect protection, a corrosion-resistant bronze slinger is mounted on take-off shaft for deflection of leakage.

(Pump motor is a product of U.S. Electrical Motors, Inc., Dept. CP, Box 2058, Terminal Annex, Los Angeles 54, Calif. . . . or for more information check CP 6690 on handy form, pages 2 and 3.)

Two types of lubricants in spray 'bombs'

Uses: As lubricants for many applications including mold release, chains, gages, valves, etc.

Features: Lubricants are packaged in aerosol-type 'bombs' for spraying a fine mist of sub-micron particles of molybdenum disulfide over and into friction surfaces.

Description: Lubri-Mist #1 has a volatile carrier giving dry lubrication, while Lubri-Mist #2, with a synthetic oil carrier, offers an oily surface. It is reported that lubricants will not wash off with water, solvents or other chemicals, will not readily wear off or "plate" without buildup, are not affected by high temperatures, and leave no carbon residue.

(Lubricants are products of Lubri-Mist Co., Inc., Dept. CP, Box 35, Waukesha, Wis. . . . or for more information check CP 6691 on handy form, pages 2 and 3.)



The all new Oster "Featherweight Champ", a Power Drive for Hand Pipe Tools, has just weighed in at 75 lbs. One man can move it and use it with ease . . . yet the "Featherweight Champ" is exceptionally sturdy and powerful. Ideal for "on the spot" threading, its range is 1/4" to 2", and it is available with either electric or gasoline power.

For the full story on the "Featherweight Champ" see your local Oster Distributor.

THE OSTER MANUFACTURING CO.
Main Office and Factory:
2032 East 61st St. • Cleveland 3, Ohio

Builders of Cost Reducing Threading Equipment Since 1893

When inquiring check CP 6692 on handy form, pgs. 2-3

SOLVE CORROSION PROBLEMS!

Select HARPER Everlasting Fastenings

Harper can supply corrosion-resistant fastenings to meet every need. Call Harper for bolts, nuts, screws, washers, rivets and special fastenings of brass, silicon bronze, naval bronze, Monel, aluminum, all stainless steels. Over 7,000 different items ready for prompt delivery. See your Harper Branch or Distributor or write for catalog.



EVERLASTING FASTENINGS

The H. M. Harper Company
8241 Lehigh Avenue
Morton Grove, Illinois
Please send me Harper Catalog 25.

Name.....
Company.....
Address.....
City.....State.....

When inquiring check CP 6693 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Loads to 5000 lb easily handled
by simple motor-driven
work-positioner . . .**

units are controlled by individual push-button and may be installed in pairs

Uses: Suited for bench-level presentation of sheet stock such as paper, paper-board, and sheet metals as well as other types of work-pieces that can be handled in stacks.

Features: Bench-stand table lift can easily handle loads up to 5000 lb.

Description: Unit, called the Benchevator, is basically simple. It consists of a motor-driven self-locking screw-actuated column, set in floor beside machine or inspection bench, with a table top that can be made in any desired size. It may be installed as a single unit or in pairs, one to handle incoming material and the other to receive finished work or accepted pieces. Top of lift is raised or lowered to most convenient height as work proceeds.

Raising or lowering table is controlled through individual push-buttons. These can be located at any place within reach of inspector or operator. Buttons actuate an electric motor which lowers and raises table through a positive gear drive. Automatic limit switches prevent over-running. Standard lifting or lowering speed is 28"/min. In standard model, maximum lift distance is 36". Units providing more height are available on order.

(Work-positioners are a product of Dept. B, Special Products Div., Rodney Hunt Machine Co., Dept. CP, Orange, Mass. . . . or for more information check CP 6694 on handy form, pages 2 and 3.)

**Manual or automatic operation
offered on safety-relief
control valve . . .**

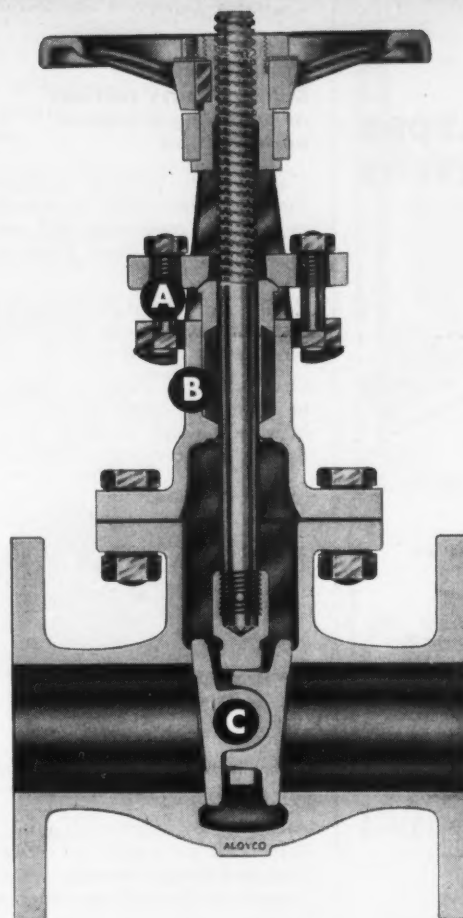
change of external actuating equipment adapts unit for almost all control services

Uses: Primarily designed for safety and relief valve field, unit can easily be adapted for almost all liquid and vapor control services by changing only external actuating equipment.

Features: Valve can be opened and closed manually or automatically either at valve or at remote location. It can be pneumatically, hydraulically, or electrically operated from the remote location.

Description: High flow capacity valve has angle body design and is available in 2, 3, 4, and 6" sizes for pressures from 3 oz/sq in to 150 psi. Unit has one moving part and uses no large springs, moving pistons, stuffing boxes, or close-tolerance guides. It is easily adjusted and tested. External actuating equipment can be removed or replaced without removing basic valve.

(Controlled flow valve is a product of Controlled Flow Valve Co., Dept. CP, 805 Baltimore Ave., Kansas City, Mo. . . . or for more information check CP 6695 on handy form located between pages two and three.)



ALOYCO 111-A GATE VALVE

**Advanced features of these valves increase their
corrosion-resistance**

- Double disk ball-and-socket type wedges are free to rotate and are non-fouling in any position to assure pressure tightness on both seats.
- Stuffing boxes may be repacked with Teflon or conventional packing material even when valve is under pressure and wide open.
- Rocker type gland plates and guided gland followers prevent marring of the stems when repacking.
- Handwheels keyed to yoke-bushings for easy disassembly.
- All parts are of corrosion-resistant alloy except yoke-bushings, nuts and handwheels. Available from 1/2" to 12". Alloys regularly stocked are Aloyco 20, 18-8S and 18-8SMo.

This Aloyco 20 valve cuts maintenance costs in corrosive service

- Prevent valve corrosion from eating into your production and profits!

How? Look to Aloyco, the world's largest specialists in the manufacture of corrosion-resistant valves, for the valve design and alloy that will give lasting, maintenance-free performance.

Mechanically, this Aloyco Gate Valve 111-A is evidence of the careful attention given every detail of construction that marks Aloyco's complete line. To determine the best materials for each specific application, our engineers will be glad to pre-test various alloys under your actual line conditions and base their recommendations on actual service data.

If you have a problem of valve maintenance or replacement because of corrosion, write to Aloyco's Corrosion Engineering Service about your own valve needs. Or call your nearest Aloyco distributor.

- A. Rocker type gland plates and guided gland followers.**
- B. Teflon packing for stuffing box (optional).**
- C. Double disk, ball-and-socket type wedges.**

ALOYCO 20

This alloy was specifically developed to provide corrosion-resistance against a wide range of sulphuric acid concentrations and temperatures.

Since its inception, Aloyco 20 has also proved highly effective in handling varied concentrations of sludge acid, caustic soda, fatty acids, acetic acid, phosphoric acid, chlorinated hydrocarbons, and many other process solutions.

ALLOY STEEL PRODUCTS COMPANY, Inc.

1302 West Elizabeth Avenue, Linden, New Jersey
Plants: Linden, N. J.; Bloomfield, N. J.; Elizabeth, N. J.

DISTRICT OFFICES:

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PITTSBURGH 22, PA.
318 Investment Bldg.

ST. LOUIS, MISSOURI
1221 Locust St.

HOUSTON 6, TEXAS
K. E. Luger Co
2716 Danville St.

WILMINGTON, DEL.
226 West Ninth St.

ATLANTA, GEORGIA
333 Candler Bldg.

CHICAGO 4, ILLINOIS
332 So. Michigan Ave.

SAN FRANCISCO, CALIF.
24 California St.

LOS ANGELES 22, CAL.
5442 Jilton St.

BUFFALO 14, N. Y.
3053 Main St.



When inquiring check CP 6696 on handy form, pgs. 2-3

MECHANICAL SEALS FOR . . .

. . . AGITATORS AND MIXERS

Seal shown is a Sealol-Flexibox design providing a pressurized fluid barrier.

Sealol's varied experience in sealing rotating shafts against leakage of chemicals is available to you. Does your shaft sealing problem come within these limits?

Shaft diameters to 6"
Speeds to 1800 rpm

Temperatures to 500° F.
Pressures to 2000 psi.

Consult Sealol on the right way to seal all types of mixing and agitating operations:

Acids
Hydrocarbons
Chlorinated hydrocarbons
Esters

Ketones
Alcohols
Slurries

Salts
Antibiotics
Biotics

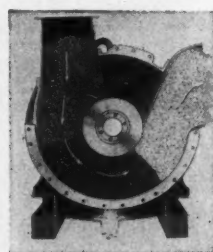
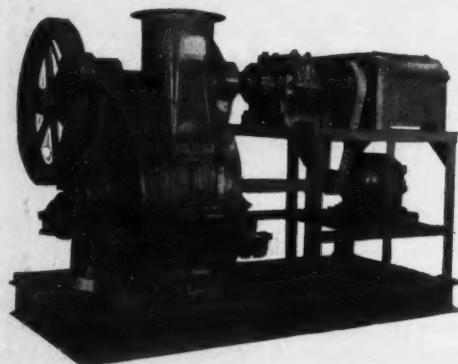
Send job description for engineering data and recommendations.

SEALOL

Sealol Corporation, 21 Willard Ave., Providence 5, Rhode Island. Chicago, Cleveland, Los Angeles, Houston, Philadelphia, Kansas City.

THE  BALANCED PRESSURE SEAL

When inquiring check CP 6697 on handy form, pgs. 2-3



CROSS SECTION

"DAVENPORT" CONTINUOUS PRESS

"DAVENPORT" Continuous Presses are made in three sizes and are the most efficient method of extracting excess moisture from semi-solids.

"DAVENPORT" Continuous Presses make it possible for chemical, food processing, rubber reclaiming plants, packing houses, breweries and distilleries . . . and allied industries, to extract excess moisture from their products at the lowest possible cost.

Send for our catalog. For quick reference, see you 1953 or '54 Chemical Engineering Catalog.

DAVENPORT MACHINE AND
Foundry Company
DAVENPORT IOWA

DAVENPORT
De-Watering
Presses and
Screens
ROTARY
Steam Tube, Hot
Air and Direct Fire
Dryers
Water Tube and
Air Coolers

When inquiring check CP 6698 on handy form, pgs. 2-3

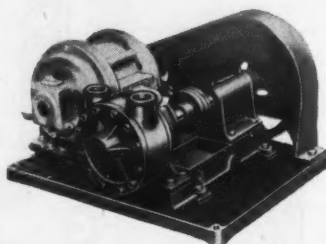
MAINTENANCE

**Delivers heavy fuel oils
at operating pressures
up to 100 psi**

Uses: For pumping of heavy fuel oils. Unit produced primarily to operate in conjunction with manufacturer's "CF" closed flame gas-oil burners.

Features: Pump is designed to deliver heavy fuel oils at operating pressures up to 100 psi.

Description: Pump is reported to be smooth operating unit with high suction-high discharge characteristics for delivering a continuous,



Pumps in either direction at 400 rpm

pulsation-free stream of fuel oil to burner. It has a gear and crescent type pumping element, which pumps equally well in either direction at 400 rpm. Unit can be used for severe continuous duty pumping of heavy fuel oil without cavitation, pounding, or churning.

(Fuel oil pump is a product of Eclipse Fuel Engineering Co., Dept. CP, Rockford, Ill. . . . or for more information check CP 6699 on handy form, pages 2 and 3.)

Decimal equivalent decal offered

Decal is only 6 x 1 1/4" and is designed for application to slide rules, T-squares, drawing boards, desk tops, and other drawing equipment. Figures, showing decimal equivalents in 64ths, are easy to read, printed in sharp black and red type on a white background.

Decimal equivalent decal is available from The Meyercord Co., Dept. CP, 5323 W. Lake St., Chicago 44, Ill. When inquiring specify CP 6700 on handy form, between pages two and three.

MAKE
You can save money
and time with
MARMAN Band Clamps



Quick-Coupling Clamp...a Marmar design for instant removal and installation...Stainless Steel...tough, corrosion resistant, vibration proof.

There is a Marmar design for every clamping operation. Order quick-coupling clamp direct from this advertisement. Write, wire or phone for catalog or engineering assistance. CP-2

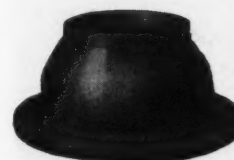
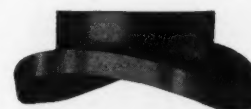
SERIES NO.	360	365	450	455
MIN. WIDTH	3/8"	3/8"	3/4"	3/4"
BAND GAGE	.020	.020	.025	.025
BOLT SIZE	10-32NF-2 x 1 1/4"	10-32NF-2 x 2 1/4"	1/2-28NF-2 x 2 1/2"	1/2-28NF-2 x 3 1/2"
MIN. DIA.	2	3	4	7

MARMAN
PRODUCTS CO., Inc.

11214 EXPOSITION BLVD.
LOS ANGELES 64, CALIF.

7-434

When inquiring check CP 6701 on handy form, pgs. 2-3



Economy in pilot or development small lots as well as in program production can be achieved by consultation with Lenape for recommendations on seamless or weldment construction requiring:

- Circular of symmetrical flanged or fluted members of 1/4" to 4" rolled plate stock.
- Upset flanged or plain forged and pierced rings.
- Truncated or closed cones.

Expanded facilities have extended our range of capacity. Mail sketch or print direct, or consult nearest representative.

Take Advantage
of
LENAPE
CUSTOM
FORMED
PRODUCTS

LENAPE
HYDRAULIC PRESSING
AND FORGING CO.

LENAPE HYDRAULIC PRESSING & FORGING CO.
DEPT. 100 WEST CHESTER, PA.
RED MAN PRODUCTS

When inquiring check CP 6702 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**licking
liquids**

Bee-Zee Round Rod Screens offer a money-making solution to any problem concerning reducing moisture content or removing liquids. Their special round rod design provides greater efficiency, longer service. Special alloy stainless steel makes Bee-Zee Screens last longer, resist rust and corrosion.

BEE-ZEE EXTRAS — Besides their unequalled efficiency in deliquifying, Bee-Zee Screens guarantee extra months of accurate service . . . less down-time. They can be fitted to any screening or drying equipment.



WRITE FOR
CATALOG

**BIXBY-ZIMMER
Engineering Co.**

724 Abingdon St. Galesburg, Illinois

When inquiring check CP 6703
on handy form, pgs. 2-3

FEBRUARY, 1954

ENGINEERING & MAINTENANCE

Subminiature sizes of O-rings designed to meet precise space requirements

available in three stock sizes for moving or non-moving seals

Uses: For pressure sealing in pumps, valves, nozzles, and general industrial hydraulic applications.

Features: Elastomeric O-rings are subminiature in size and precision-molded to close tolerances.

Description: Made of manufacturer's synthetic rubber compounds, O-rings are available in three stock sizes: .029 x .040 x .109"; .070 x .040 x .150"; and .100 x .070 x .240". They are for either moving or non-moving seals.

These 6227 series O-rings are said to have wide range of pressure, temperature, and movement, better sealing in both directions of pressure flow, and longer sealing life. They are easily adapted to a variety of sealing applications and have low friction.

(Subminiature O-rings are products of Dept. 3, Stillman Rubber Co., Dept. CP, 5811 Marilyn Ave., Culver City, Calif. . . . or check CP 6704 on handy form, pages 2 and 3.)

Safety of performance assured by self-polishing floor wax containing non-slip agent

Uses: For protection and added safety of linoleum, rubber and asphalt, terrazzo, varnished floors.

Features: Actual tests are said to have proven the lasting qualities of the wax. In addition, a small percentage of non-slip material is included to assure absolute safety of performance on the floor.

Description: Contents of this coating are almost 100% Carnauba wax, said to be the finest natural waxing agent known. It is reported that a high luster, extremely hard protective floor coating results from one application of this wax.

(Product of M & H Laboratories, Dept. CP, 2705 Archer Ave., Chicago 8, Ill. . . . or for more information check CP 6705 on handy form, pages 2 and 3.)

Details of small capacity, controlled vol pumps

Illustrated 8-page catalog gives data on capacities, pressures, materials of construction, and operating details of small capacity, controlled volume pumps. Pumps are reciprocating, positive displacement plunger type and can be operated with a variety of manual and automatic controls, governing both the length and speed of plunger stroke.

Bul 653 is available from Milton Roy Co., Dept. CP, 1300 E. Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 6706 on handy form, pages 2 and 3.

N.F.M. makes a FULL LINE of Filter Media!



Call on NFM for Filter Cloths made from:

**NYLON
COTTON
GLASS
ORLON*
DYNEL
VINYLON N**
SARAN
VINCEL*****

We offer you a full line from which to find the answer to your filter cloth problems. These cloths cover a wide range of resistance to heat, resistance to attack by acids, mold, fungi, alkalies and bacteria, retention of fines, etc. And, because we make a number of different cloths, we are in a position to recommend the best cloth to solve your problem. Our policy is to provide you with the best cloth available to do the job.

For test samples, and recommendations based on our many years of experience, write us giving full details of your filter operations.

Remember, too, we have facilities for making up filter element covers from any of the available fibers, sewed with thread of the same resistance properties as the yarn that goes into the cloth.

*TM — Du Pont's trade mark for its acrylic fiber
**TM — Union Carbide & Chemical Co.
***TM — N. F. M. Corp.



General Offices & Mills: New Haven 14, Conn.
Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives

Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway Johannesburg, South Africa
2627 West 19th St. Basaltown Center Bldg. 1406 Second National Bank Bldg. Nicolai Fris Edward L. Butman

When inquiring check CP 6707 on handy form, pgs. 2-3

125,000 pounds of DRY CRYSTALS per hour!

These 14 Super-D-Hydrators will produce approx. 900,000,000 lbs. of crystals in the next 12 months.

... ammonium sulphate, adipic acid, sodium bicarbonate, naphthalene, acetylsalicylic acid, sodium sulphate, sodium chloride, polystyrene, para xylene . . . to mention but a few of the crystals being dehydrated in Sharples Super-D-Hydrators.

The 14 machines recently photographed on the assembly floor of the Sharples plant are mute evidence of industry's increasing recognition of the extreme flexibility and economy that the Super-D-Hydrator offers. Eleven of those shown are the C-27, with capacity ranging up to 8 tons of dry crystals per hour, three are the C-20, with capacities up to 4 tons per hour.

The Super-D-Hydrator is what its name implies—industry looks to Sharples for extra profits in crystal dehydration.

Bulletin 1257 will be sent upon request.

SHARPLES

THE SHARPLES CORPORATION
2300 WESTMORELAND STREET
PHILADELPHIA 40, PA.

NEW YORK • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO
NEW ORLEANS • SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON

Associated Companies and Representatives throughout the World

When inquiring check CP 6708 on handy form, pgs. 2-3

New Literature

Describes different types of magnetic separators

Described in 6-page bulletin are three types of electromagnetic equipment: gravity, pipeline, and underfeed, used for removal of iron contamination from liquid suspensions of all viscosities. Two dry type models for powdered and granular materials are also illustrated. Cross-sections with dimension and capacity tables are incorporated in text.

Bul 46 is available from S. G. Frantz Co., Inc., Dept. CP, Brunswick Pike and Kline Ave., P. O. Box 1138, Trenton 6, N. J. When inquiring specify CP 6709 on handy form, pages 2 and 3.

Bond for organic finishes furnished by phosphates

From six available phosphating compounds described in four-page bulletin, it is said that the correct surface preparation coating may be found for any type of organic finishing. Included are recommended uses, methods of application, equipment required, metals which can be treated, coating weights in mg/sq ft, and operation cycle.

Bul A-108 is issued by Turco Products, Inc., Dept. CP, 6135 S. Central Ave., Los Angeles 1, Calif. When inquiring specify CP 6710, pages 2 and 3.

Custom fabrication facilities outlined in bulletin

Facilities for custom fabrication of process industry equipment in standard and special alloys are outlined in 4-page bulletin. Range of products produced, data on sizes and types of production equipment, productive capacity and transportation facilities are described.

Bul 10 is available from Quaid Fabrications, Inc., Dept. CP, 157-167 W. Oxford St., Philadelphia 22, Pa. When inquiring specify CP 6711 on handy form, pages 2 and 3.

Five new 16 mm films instruct in professional safe driving

Wilbur Shaw, champion of the Indianapolis Speedway, teams up with bowler Ned Day, golfer Lloyd Mangrum, and baseball pilot Paul Richards to build and maintain championship driving ability through set of five new films described in bulletin. As star of the series, Shaw illustrates the difference between "part time" safe

driving and a sound mental approach to long-range efficiency behind the wheel. He shows, by analogy, how any driver needs the same kind of skills developed by these sports authorities if he is to become expert in his profession.

Two-page publication tells how each film in the series is designed to teach professional and company drivers a safety lesson which will stay with them. Films are 16 mm and have a running time of 20 minutes each. They are available in color or black and white.

"Safe Driving Films" bulletin is issued by National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 6712 on handy form, pages 2 and 3.

Electronic watchdogs guard against flame failures in burners

Two bulletins explain features of photoelectric smoke indicators. Bul CP522 describes complete automatic starting and operating flame failure system for industrial and commercial gas or oil and combination gas and oil burners.

Bul CP519 provides information on the system for manually or semi-automatically ignited gas, oil, pulverized coal and combination fuel burners.

Electronic devices visually check either pilot flame, main flame or both and cause immediate shutoff of all fuel valves in event of flame failure. Specification, installation data and operation details are covered.

Bul CP519 and CP522 are issued by Combustion Control Corp., Dept. CP, 718 Beacon St., Boston 15, Mass. When inquiring specify CP 6713 on handy form, pages 2 and 3.

Details complete line of industrial fire hose

Some of fire hoses described in six-page bulletin are chemical and booster, single and double jacket cotton rubber lined, special flat folding type to conserve space, engine suction, forest fire fighting and many other types. This bulletin, well-illustrated through cross-section and cutaway photographs, includes construction details, performance data, sizes, weights, working pressures and recommended uses. Information regarding the different types of couplings used with the hose is also included.

"Quaker Industrial Fire Hose" is issued by Quaker Rubber Corp., Division of H. K. Porter Co., Inc., Dept. CP, Tacony and Comly Sts., Philadelphia 24, Pa. When inquiring specify CP 6714 on handy form, pages 2 and 3.

Double Capacity At Lower Cost



MIKRO-COLLECTOR operates at 330 cfm and handles 350 grains per cu. ft. of air. Horizontal screw and small vertical elevator deliver filtered material to classifier at right.

MIKRO'S INTEGRATED SYSTEM has again proven itself to be both a money-saver and a time-saver in the combined functions of grinding, blending and dust control.

At the SERUTAN plant in Newark, N. J., this unified method (made possible by the incorporation of the MIKRO low pressure air conveying system) has out-moded batch handling by providing a continuous, automatic flow of material from a No. 2 DH MIKRO-PULVERIZER on one floor, to a MIKRO-COLLECTOR* on the floor above.

* Patents Applied For by H. J. Hersey, Jr. and Pulverizing Machinery Company

PULVERIZING MACHINERY COMPANY
60 Chatham Road • Summit, New Jersey

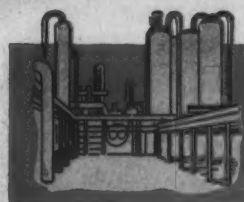
PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE

100% increase in production . . . reduced cost due chiefly to elimination of batch handling . . . clean, dustless operation . . . improved working conditions . . . full product recovery . . . absolute protection of product against contamination.

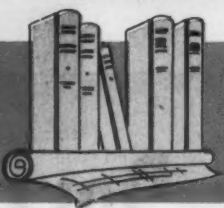
This high-efficiency push-button operation steps up production by 100% for Serutan, but it can be engineered to meet almost any production quota on a wide variety of materials. It will pay you to investigate its possible application in your own plant set-up. Write now for information and descriptive literature.

MIKRO-PULVERIZER
MIKRO-ATOMIZER
MIKRO-COLLECTOR
REG. U.S. PAT. OFF.

When inquiring check CP 6715 on handy form, pgs. 2-3



Processing and Engineering Data



70a

PROPERTIES OF KETONES

Data taken from CARBIDE AND CARBON CHEMICALS COMPANY'S Booklet "KETONES"

Nomograph prepared by CHEMICAL PROCESSING STAFF

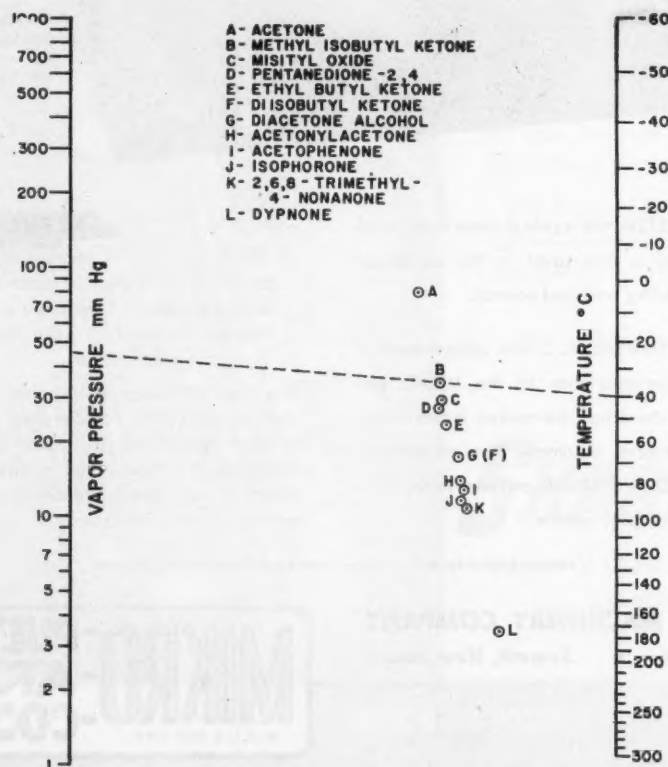
Since ketones are widely used as solvents and intermediate chemicals, collected data concerning them should be of wide interest in chemical processing operations. Fragmentary data presented here were adapted from a comprehensive collection in 44-page booklet "Ketones."

Nomograph of vapor pressures permits a rapid and accurate estimation of vapor pressure of any one of twelve ketones listed. In order to use it, a straightedge connects temperature with the keyed point for proper ketone. Intersection on pressure scale shows what vapor pressure would be. At a temperature of 40°C, for example, dashed line shows that methyl isobutyl ketone has a vapor pressure of 46 mm of mercury.

Table shows solubilities of various resins in ketones (and other solvents). This table is reproduced from booklet.

Illustrated 44-page booklet contains tables of physical properties, detailed information about uses of 15 ketones, shipping data, ten pages of curves, test methods and other information. Booklet F-4767 is issued by Carbide and Carbon Chemicals Company, A Division of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N.Y. When inquiring specify CP 6716 on handy form, pages 2 and 3.

* "Ketones"—Copyright, 1953, by Union Carbide and Carbon Corp. and used by its Division, Carbide and Carbon Chemicals Company.



Chemical Processing, February 1954

Economical Bronze Design



Series I—Heavy duty bronze rotary gear pumps
Oilless bearings 2-23 G.P.M.—0-100 P.S.I.

Series II—Close coupled motor driven bronze pumps
Oilless bearings 2-4 G.P.M.—0-100 P.S.I.

Series F—High volume bronze rotary gear pumps
Oilless bearings 50-150 G.P.M.—0-150 P.S.I.

Series IV—Rubber impeller bronze pumps
Oilless bearings 6-21 G.P.M.—0-30 P.S.I.

Series 55—Standard bronze rotary gear pumps
Grease fittings 2-23 G.P.M.—0-100 P.S.I.

Series G—Standard bronze centrifugal pumps
Grease fittings 2-25 G.P.M.—2-10 P.S.I.

OBERDORFER BRONZE PUMPS

Industrial Pump Div., Oberdorfer Foundries, Inc.
642 Thompson Rd., Syracuse, N. Y.

Address the 1954 edition of the Oberdorfer Industrial Pump catalog to:

NAME
COMPANY
ADDRESS

Do you want a factory representative to call ☐ Yes ☐ No

When inquiring check CP 6717 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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Directory lists manufacturers of steel shipping containers

The 1953-1954 directory of steel shipping container manufacturers, covering by volume 95% of total industry production, provides quick product-manufacturer cross-reference and addresses for manufacturer's plants and offices. Statistics on annual production of various container types and their uses by industries, historical material, container specifications, and recent developments in coating research are described.

Directory for 1953-1954 is available on letterhead request to Steel Shipping Container Institute, Inc., Dept. CP, 600 Fifth Ave., New York 20, N. Y.

Use quality control methods on items in first aid kit

Illustrated 6-page folder describes "Type D" first aid kits. Manufacturer's method of quality control allows all items in kit to be traced back to its original source. In-use photos, supply lists, and specifications are included.

Bul 0401-2 is issued by Mine Safety Appliances Co., Dept. CP, 201 N. Braddock Ave., Pittsburgh 8, Pa. When inquiring specify CP 6718 on handy form, pages 2 and 3.

Foamed plastic has many uses

Illustrated 28-page booklet outlines many uses of foamed plastic as a material for construction, electronic devices, packaging, reinforcement of equipment parts, thermal insulation, and vibration damping. Stress, compression, tension, shear, density, and water sorption properties are shown. The foamed-in-place plastic will fill any cavity regardless of configuration and lends itself well to the strengthening of already fabricated parts.

Bul "Nopco Lockfoam—New Foamed Plastic" is issued by Nopco Chemical Co., Dept. CP, 1st & Essex St., Harrison, N. J. When inquiring specify CP 6719 on handy form, pages 2 and 3.

Takes dollars out of the air in solvent recovery

Illustrated 4-page bulletin describes process of recovery of volatile solvents that might otherwise be wasted. Flow chart pictures a typical system. Solvent-laden air, filtered through activated coconut shell carbon results in pure stripped air plus the salvaging of reusable solvents. Bulletin shows actual installations in operation.

Bul "Solvent Recovery" is issued by Barney-Cheney Co., Dept. CP, Cassady at 8th Ave., Columbus 19, Ohio. When inquiring specify CP 6720 on handy form, pages 2 and 3.



Spheres "Bed" Perfectly in catalytic processing. In Norton Spherical Catalyst Supports you get uniform beds that promote uniform flow of

gases and assure minimum pressure drop. Spheres are available in sizes 1/4" to 1"; Rings 3/32" I.D. to 1/2" I.D.; Pellets 1/8" to 1/2".

Catalyst supports to your special prescription**...Norton engineered for your special requirements**

Where catalyst supports were applicable Norton engineers have been successful in meeting the requirements of a large variety of conditions.

Over 40 years' experience in research and developments of special refractory materials and mixtures have enabled Norton to tailor special refractory mixtures to meet the requirements of the chemical industry.

ALUNDUM® Catalyst Supports are a good example. They have such qualities as great refractoriness, chemical inertness, strength and high resistance to abrasive action. They are made by Norton's exclusive "controlled structure" process. It provides

medium porosity of 30-35% with rough open structure for maximum adherence of catalyst, or high porosity 42-47% with large connected internal pores, uniformly dispersed for maximum deposition of the catalyst.

Test them yourself

See what Norton ALUNDUM Catalyst supports can do for you. If you would like to see samples, see your Norton refractories representative or write Norton Company, 561 New Bond Street, Worcester 6, Mass. Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

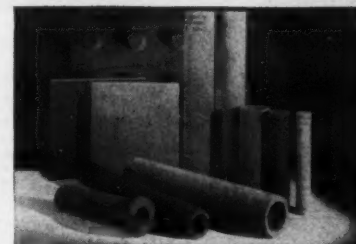
NORTON
REFRACTORIES
ENGINEERED **R** PRESCRIBED

Making better products...to make other products better

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS



Norton Exclusive Fused Stabilized Zirconia, an amazing material able to take temperatures double the melting point of most metals. No other refractory is so chemically stable at such high temperatures. (Up to 4700°F.) Ask for Bulletin 793.



Norton Exclusive. Norton ALUNDUM Seamless Tubes for filtration, aeration, diffusion maintain constant air or liquid pressure. ALUNDUM porous medium also available in plates, discs and diaphragms. Ask for Bulletin No. 140.

When inquiring check CP 6721 on handy form, pgs. 2-3



Processing and Engineering Data



PROPERTIES OF KETONES

70b

RESIN SOLUBILITIES*

	Cellulose Acetate (LL-1)	Cellulose Acetate Butyrate (1)	Cellulose Acetate Butyrate (2)	Cellulose Acetate Propionate (3)	Cellulose Acetate Propionate (4)	Ethyl Cellulose (N-22)	Polystyrene
Acetone	S	S	S	S	S	S	PS
Methyl Acetone	S	S	S	S	S	S	PS
Methyl Ethyl Ketone	S	S	S	S	S	S	S
Diethyl Ketone	I	SW	S	SW	S	S	S
Methyl Isobutyl Ketone	I	I	S	I	S	S	S
Diisopropyl Ketone	I	I	G	I	I	G	S
Mesityl Oxide	PS	SW	S	S-G	S	S	S
Di-n-Propyl Ketone	I	I	S	I	I	S	S
Ethyl Butyl Ketone	I	I	S	I	I	S	S
Methyl Amyl Ketone	S	SW ⁶	S	I	PS	S	S
Cyclohexanone	S	S	S	S	S	S	S
Diisobutyl Ketone	I	I	I	I	I	SW	SW
Diacetone Alcohol	S	PS	S	S	S	S	I
Acetonyl Acetone	S	S	S	S	S	SW	S
Acetophenone	PS	PS-G	S	S	S	S	S
Isophorone	S	S	S	S	S	S	S

	Methyl Methacrylate	Vinylite*	Resins	Density lb./gal. at 20°C	Relative Evaporation Rate
		VYHH	AYAF	XYHI	
Acetone	S	S	S	SW	1160
Methyl Acetone	S	S	S	S	1050
Methyl Ethyl Ketone	S	S	G	G	572
Diethyl Ketone	S	S	S	S-G	275
Methyl Isobutyl Ketone	PS	S	S	PS	165
Diisopropyl Ketone	I	S	S	I	120
Mesityl Oxide	SL-S	S	S	G	94
Di-n-Propyl Ketone	I	S	S	SW	55
Ethyl Butyl Ketone	SL-S	S	S	G	45
Methyl Amyl Ketone	SL-S	S	S	G	40
Cyclohexanone	S	S	S	S	23
Diisobutyl Ketone	I	S-G	PS	SW	18
Diacetone Alcohol	S	S	S	S	14
Acetonyl Acetone	S	S	S	G	—
Acetophenone	S	S	S	S	3
Isophorone	PS	S	S	S	3

Notes: *Registered Trade Marks of Union Carbide and Carbon Corp.

1 17% Butyryl

2 37% Butyryl

3 13-15% Propionyl

4 31% Propionyl

5 0.5 gram resin to 9.5 ml solvent

6 at 60°F

7 based on n-Butyl Acetate = 100

8 Concentration = 0.5 gram resin to 4.5 ml of solvent

S — soluble

G — gel

PS — partly soluble

PS-G — partly soluble, tendency to gel

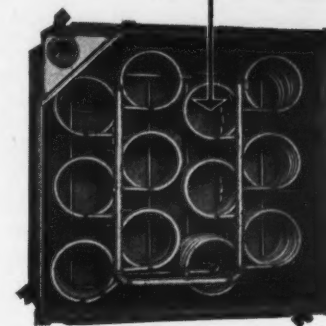
SL-S — slightly soluble

S-G — soluble, tendency to gel

SW — swelling

I — insoluble

Cooling Coil made of
ELECTRUNITE Stainless
Steel, Type No. 316,
used in bottom tray
of Girdler Company's
5-Tray Votator Semi-
Continuous Deodorizer.



Why Oil and Fat Processors Use ELECTRUNITE Heat Exchanger Tubes

• Here's an industry where the quality of tubing used in heat exchangers is important. Shutting down too often for replacement means time and money. And higher production costs.

To help keep equipment operating costs down, manufacturers like Votator Division of Girdler Company use Republic ELECTRUNITE Tubing in their products. Here's tubing that's easy to coil because it's uniformly ductile, easily workable. Wall thickness is uniform, and that's important. So are uniform diameter, uniform concentricity and uniform strength. And ELECTRUNITE Tubing meets a wide range of specifications including ASTM A-214 for carbon and A-269 in stainless analyses. It's also made to meet many customer specifications.

There are many advantages found in ELECTRUNITE Heat Exchanger Tubes. There are no hidden defects, because this tubing is made from flat-rolled steel that's inspected on both sides before the tubing is formed. It's free from scale, scabs and slivers, has a fine surface that resists corrosion. No longitudinal thin spots, either.

For new equipment . . . or replacements . . . it will pay you to specify Republic ELECTRUNITE Pressure Tubes. Available in both carbon and stainless steel analyses. The facts are in booklet CEC-54. Write for it to:

REPUBLIC STEEL CORPORATION

Steel and Tubes Division

206 East 131st Street, Cleveland 8, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO

Export Dept.: Chrysler Bldg., New York 17, N.Y.



ELECTRUNITE — The Original Electric Welded Boiler Tube

When inquiring check CP 6722 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Combustion
oil or gas

Description
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Combustion safeguards for oil or gas burners

Described in four-page bulletin are manufacturer's Protectoglo systems which are combustion safeguards for industrial ovens, furnaces, and other heating applications fired by multiple oil or gas burners. System components are discussed, and schematic diagram is given showing use of equipment guarding three gas-fired burners.

Bul 9603-1 is issued by Minneapolis-Honeywell Regulator Co., Industrial Division, Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6723 on handy form, pages 2 and 3.

Samples of 25 micrograms enough for analysis

Among infrared accessories illustrated in 2-page bulletin is a microcell used for analysis of samples as small as 25 micrograms. Other cells for handling solids, liquids, and gases are illustrated and described.

Bul A3 is issued by the Perkin-Elmer Corp., Dept. CP, Norwalk, Conn. When inquiring specify CP 6724 on handy form, pages 2 and 3.

The Do's and Don'ts of preventing falls

Cartoon booklet measuring $3\frac{1}{2}$ by $7\frac{1}{2}$ inches gives workers safety do's and don'ts with respect to preventing falls resulting from running, jumping, hitching rides and other thoughtless acts. "How to Prevent Falls" is issued by National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 6725 on handy form, pages 2 and 3.

Heat distributed over wide area with use of line burners

Line burners are designed for gas-fired applications where heat must be distributed over a wide area by a continuous flame, lighted from one point. Bulletin shows retention type burners that can be used in either re-circulating air heating systems or in non-circulating air heating systems where temperatures do not exceed 1000°F. Burners may be installed to fire any direction and an adapter flange is available for applying either a blast or atmospheric pilot and flame failure protective equipment. Also included are burner selection table and typical burner arrangements chart.

Bul H-17 is available from Eclipse Fuel Engineering Co., Dept. CP, 1001 Buchanan St., Rockford, Ill. When inquiring specify CP 6726 on handy form, pages 2 and 3.

HOW MUCH DID YOUR Over-Age Filter Presses COST YOU TODAY?

Obsolescence sneaks up on you while you're not looking. The filtration equipment that was doing a good job by yesterday's standards can be an expensive luxury today. That's why it's a good idea to take a look at your production records . . . check cloth costs, filtering cycle time, cleaning time and labor, product loss costs. Then see how they stack up against these day-after-day records of a Niagara Style "H" Pressure Leaf Filter:

- ☆ Flow rates two to five times greater than cloth covered presses.
- ☆ Positive removal of all suspended solids to almost any desired degree of clarity.
- ☆ Can be drained, opened, cleaned, closed, filled and pre-coated in a matter of minutes, not hours . . . a part-time job for one man.

NIAGARA ENGINEERS ARE AT YOUR SERVICE

Niagara engineers are practical filtration specialists with years of experience. They'll study and analyze your filtration problems . . . test samples for filterability . . . pilot the filtration for you. Then . . . when they have all the answers, they're ready to build a Niagara unit that will meet your most exacting requirements.

☆ Cake entirely removed in 10 to 15 minutes . . . drops into receptacle for immediate dry disposal.

☆ No cloths or pads required for most operations . . . a tremendous saving in material and labor.

Figure it out in dollars and cents. See how much obsolescence cost you today. Chances are the savings you could make with one or more new Niagara units would soon pay their entire cost. Let us tell you more about the fine job Niagara Pressure Leaf Filters, both vertical and horizontal, are doing in hundreds of process operations. Mail the coupon for our new illustrated catalog.



Niagara Filters

DIVISION

AMERICAN MACHINE AND METALS, INC.

DEPT. CP254, EAST MOLINE, ILLINOIS

In Europe: Niagara Filters Europe, Post Box 1109, Amsterdam-C, Holland

Niagara Filters Division, American Machine and Metals, Inc.
Dept. CP254, East Moline, Illinois

YES . . . we'd like to know more about Niagara Pressure Leaf Filters for _____ (product or operation)

- ☐ Have representative call
☐ Send new catalog NC-1-53

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 6727 on handy form, pgs. 2-3



Compressibility Factors of Light Hydrocarbons

By GEORGE E. MAPSTONE

Edited by D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

The well-known gas equation

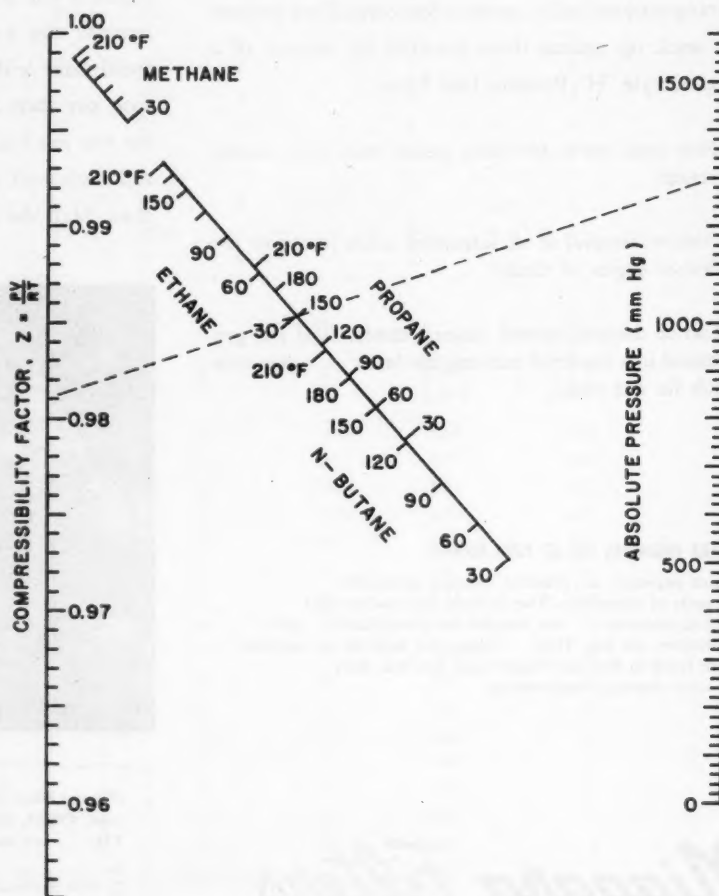
$$PV = ZRT$$

can be used for one mole of many light hydrocarbons. Compressibility factor, Z , can be found quickly for methane, ethane, propane, and butane by using this nomograph.

Typical Example

What compressibility factor should be used in the gas law equation when the gas is propane at 1300 mm Hg and 150°F?

When straightedge is aligned as shown by dashed line, Z is found to be 0.981. Note also that this would be the value of Z for ethane at 30°F and the same pressure.



Buflovak EVAPORATORS

Profitably Serve Many Industries

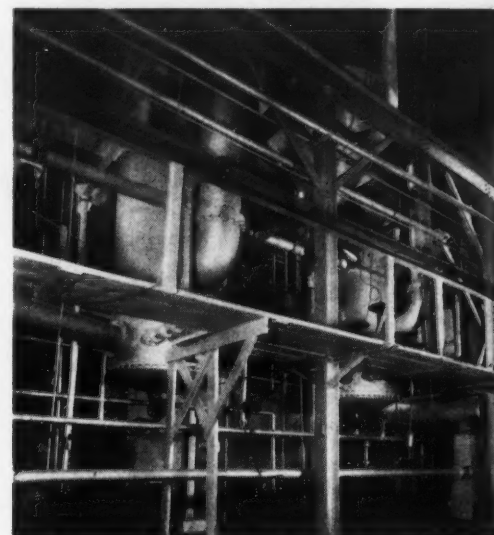
with

Dependable, Low-Cost

Evaporation

Profit-building benefits enjoyed by users of BUFLOVAK Evaporators:

- Efficient evaporation
- Highest rate of evaporation
- Maximum recovery of solids
- Simplified and economical operation



BUFLOVAK Triple Effect, V. R. C. Evaporator. Used for concentrating fish water to 35% from a solution containing 2% solids.

BUFLOVAK Evaporators are built in many types to suit all operating requirements. The various types include Long Tube Vertical Rapid Concentration, Forced Circulation, Low-Temperature Downflow, and Thermo Recompression Evaporators, in Single and Multiple Effects.

A complete 72-page book on BUFLOVAK Evaporators has proved helpful to many. A request on your company letterhead will bring a copy free.

BLAW-KNOX COMPANY

BUFLOVAK EQUIPMENT DIVISION

1645 Fillmore Ave.

Buffalo 11, N.Y.

Catalogs facilities and products of rubber molded parts maker

Two-color, 24-page catalog describes facilities and products of company which makes a wide range of custom molded parts including thermolastic and synthetic rubber O-rings, Teflon O-rings, Teflon back-up rings, and hydraulic packings to commercial and government specifications. Engineering and design information is included and standard sizes of various O-rings are listed.

Cat on facilities and products is available from Dept. C, Stillman Rubber Co., Dept. CP, 5811 Marilyn Ave., Culver City, Calif. When inquiring specify CP 6729 on handy form, pages 2 & 3.

Latest directory of safety films lists 963 of them

Available is a directory which provides the plant safety man with a comprehensive listing of 963 motion pictures and slidefilms for use in training personnel in occupational accident prevention. Films on home and traffic safety are included for the off-the-job safety program. Films in the related fields of first aid, fire prevention and civil defense are included.

To obtain the 1953-54 edition of the "National Directory of Safety Films" remit 75c direct to the National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill.

Presents line of horizontal mixers

Manufacturer's complete line of horizontal mixers, ranging in capacity from $3\frac{1}{2}$ to 500 cu ft, is described and illustrated in 4-page Bulletin H-453, available from Young Machinery Co., Dept. CP, Muncy, Pa. When inquiring specify CP 6730 on handy form, pages 2 and 3.

Specs on heat exchangers in handy tables

Five general types of heat exchangers are covered in 8-page bulletin: U-tube; straight-tube, floating head; straight-tube, fixed tube sheet; coil type; and double-pipe. Tables provide specifications of these units, and sketches reveal details of closures, seals, and passes. Manufacturer emphasizes ability to weld all commonly used materials as well as some not so common (entire heat exchanger of 99.9% fine silver is cited).

Bul 250 is issued by The Whitlock Manufacturing Company, Dept. CP, 48 South Street, Hartford 10, Conn. When inquiring specify CP 6731 on handy form, pages 2 and 3.



What Mr. Tubes Can Do For You

-about pressure tubing

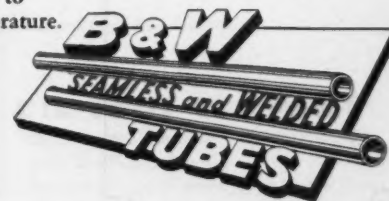
When it comes to pressure tubing, you're wise to talk to somebody who knows your problems. Mr. Tubes, your nearby B&W Tube Representative, serves the oil, chemical and power industries . . . and related fields . . . faithfully and efficiently. He is constantly concerned with tubing problems his customers encounter, and he devotes a lot of his time to helping find the right answers to questions of pressure and temperature.

Mr. Tubes can do a lot for you. Next time pressure tubing is on your mind, call on him.

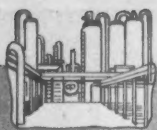
THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.—Stainless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

TA-1802(P)



When inquiring check CP 6732 on handy form, pgs. 2-3



Densities of Dilute Solutions of ZINC CHLORIDE

By D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

For dilute aqueous solution of zinc chloride (2 to 20%) densities and concentrations are related by the expression:
where —

$$d - \frac{0.000078}{(d-0.9)^2} = a + bx$$

Where

d = density of solution gm/ml
x = percentage of zinc chloride %

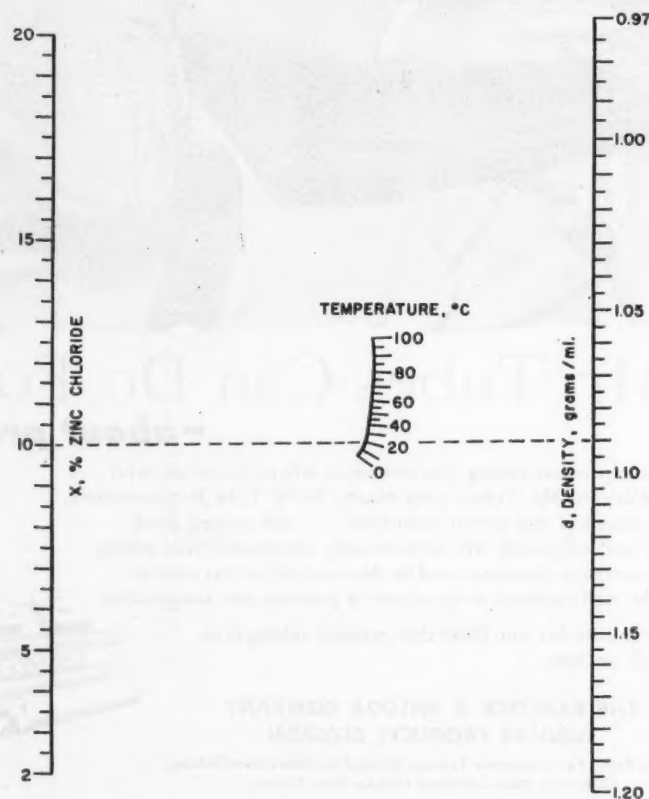
This nomograph is intended to speed estimations of concentration and density of industrial zinc chloride solutions. It is based on data given by Perry¹.

Typical Example

What is the concentration of an aqueous zinc chloride solution which has a density of 1.090 gm/ml at 20°C? Connect 1.090 on density scale with 20 on temperature scale and read desired concentration as 10.0 on per cent scale at left.

LITERATURE CITED

- (1) PERRY, J. H. "Chemical Engineers' Handbook," 3rd Ed, p 183, McGraw-Hill Book Co. (1950)



FAST! EASY! convenient.



MANAGEMENT: For Copying Letters, Reports, Contracts, Instructions, Statistics, Etc.



SALES: For Copying Orders, Letters, Inquiries, Presentations, Price Sheets, Etc.

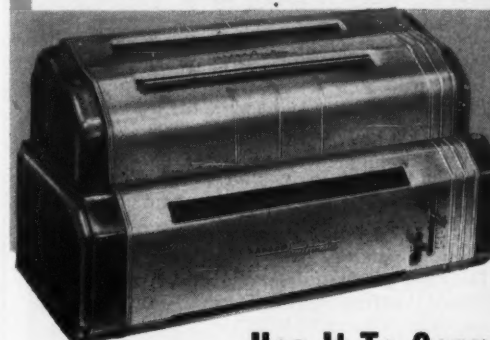
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Use It To Copy
ANYTHING right in your own office!

APÉCO *Auto-Stat*
Systematic

EVERY DEPARTMENT can use the Apeco Systematic Auto-Stat. This new all electric photocopying machine prints, processes and dries automatically. It's fast—dry copies in less than 45 seconds! It's convenient—fits on the corner of any desk... It's ready for instant use! It's easy—anyone can operate it! Saves up to 80% on copying jobs. Eliminates retyping, hand copying, checking or costly outside copying service. Makes legally accepted black and white or colored copies from any original up to 11" x 17" —printed on one or two sides. So low cost—a complete Apeco Systematic Auto-Stat installation is priced well within the budget of even the smallest firm.

Lifetime Service Guarantee



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1914 W. Peterson, Chicago 26, Illinois

RUSH ME NEW PHOTOCOPY INFORMATION KIT containing booklet on the Apeco Auto-Stat plus separate folders on copying tax returns, color copying and copying on preprinted forms.

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In Canada: APECO OF CANADA, LTD., 134 PARK LAWN ROAD, TORONTO, ONT.

When inquiring check CP 6733 on handy form, pgs. 2-3

CHEMICAL PROCESSING

When inquiring

FEBRUARY

NEW LITERATURE

Still and semi-liquids fillers described

Illustrated 4-page bulletin describes manufacturer's complete line of filling equipment for handling still liquids and semi-liquids. In addition to information on standard line of fillers, bulletin also describes automatic filler for acids, and semi-automatic five gallon filler for oils and similar products. Purpose, speed, containers and products handled, and method of filling are covered.

Bul 155 is issued by Horix Mfg. Co., Dept. CP, Corliss Station, Pittsburgh, Pa. When inquiring specify CP 6736 on handy form, pages 2 and 3.

Explains principle of water treatment

Treating water by demineralizing it is explained in 39-page booklet. Principles of ion exchange and applications of many anion and cation exchange materials are covered. Series of curves helps indicate cost estimates for operation of system. Designs and operation results of different types of demineralizing systems are included.

Bul 5800 is issued by the Cochrane Corp., Dept. CP, 17th St. below Allegheny Ave., Philadelphia 32, Pa. When inquiring specify CP 6737 on handy form, pages 2 and 3.

Test & engineering data on flexible metal hose

Current applications and full test and engineering data on flexible metal hose are provided in bulletin. It contains illustrations of company's line of high pressure interlocking bronze and steel flexible hose, tar and asphalt hose, and necessary couplings.

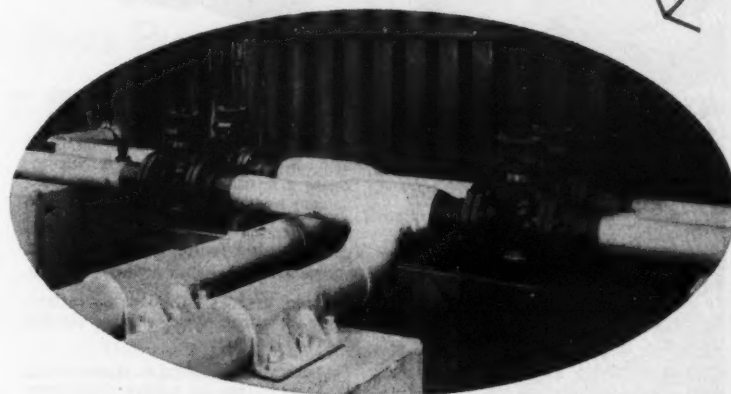
Bul 15-D is issued by Atlantic Metal Hose Co., Inc., Dept. CP, 123 W. 64th St., New York 23, N. Y. When inquiring specify CP 6738 on handy form, pages 2 and 3.

HAMER PLUG VALVES

can't stick!



Model FS15P illustrated here has Pressure Seal packings which require neither tightening nor adjustment.



HERE'S WHY:

The plug adjusting nut, an exclusive feature on all HAMER PLUG VALVES permits the plug to be lifted slightly from its seat, making it easy to open or close the valve. A simple turn lowers the plug back into its seat and holds it there in perfect alignment. No matter what the service conditions, or lapse of time between operations, this outstanding HAMER feature assures POSITIVE E-Z turn control of the plug at all times.

HAMER Line Blind Valves

Built for strength and durability, HAMER LINE BLIND VALVES are the modern means of blinding pipe lines quickly and effectively. A one-man, one-minute operation. Cuts costs, and speeds up operations.



Send for FREE Catalog

HAMER OIL TOOL COMPANY

2919 Gardena Avenue
Long Beach 6, California
Representatives throughout the United States

When inquiring check CP 6739 on handy form, pgs. 2-3



new 48 page industrial spray nozzle catalog

Here's the most comprehensive industrial spray nozzle catalog ever printed. Complete data on thousands of standard and special nozzles for every type of spraying.

Write for your free copy of Catalog No. 24.

SPRAYING SYSTEMS CO.
3216 Randolph Street
Bellwood, Illinois

When inquiring check CP 6734 on handy form, pgs. 2-3

WHEN IN NEED OF MATERIALS, PARTS OR EQUIPMENT
Used in the

CHEMICAL INDUSTRY


LOOK FIRST IN T. R.
..the encyclopedic "guide to buying"

T. R. provides more accurate and complete "where-to-buy" information and purchasing data than all other sources combined. 10,384 Advertisers use 38,943 advertisements in the 1953 Edition.

THOMAS REGISTER

PAID CIRCULATION

The National Purchasing Guide for all Industry!



THOMAS PUBLISHING COMPANY, 461-8th AVE., N.Y. 1, N.Y.

When inquiring check CP 6735 on handy form, pgs. 2-3

FEBRUARY, 1954

ALL-CHEM... the ALL-TEFLON and STAINLESS STEEL PUMP



Tired of figuring pump requirements for each new problem... Searching for solutions among a myriad of makes and models... Carrying a peck of replacement parts?

Standardize on Eco "All-Chem" Pumps—the universal pumps for lab., pilot plant and low volume chemical feed in production service.

The specs. are simple. Corrosion and contamination-wise, they handle anything stainless steel will handle.

They pump from 1 to 10 g.p.m. at pressures up to 70 p.s.i. They are positive displacement pumps with the highest suction lift over widest temperature and viscosity range.

Fluid delivery is non-deviating and non-foaming.

Adaptable to direct motor connection at 1750 RPM—or any other power source.

Self-priming on non-volatile liquids.

Unequaled for safe handling of such hazardous liquids as nitric acid and hydrogen peroxide.

Widely used in nuclear, guided missiles and other classified government installations.

Write for Bulletin A-3. Sent on request.



ECO Engineering Company
12 New York Ave. Newark 1 • N.J.

ECO

ENGINEERING COMPANY

When inquiring check CP 6740 on handy form, pgs. 2-3

NEW LITERATURE

Records consistency

Application of consistency recorder to mixing of dough in a commercial bakery illustrates operation and performance of the instrument.

Data Sheet No. 3.6-7 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 64, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6741 on handy form, pages 2 and 3.

Conversion factors for manometers

Punched for loose-leaf binding, 32-page 8½ x 11" book lists pertinent conversion factors for manometry. It is recommended Practice Book RP 2.1 of ISA.

To obtain "Manometer Tables" remit \$2 (\$1 for members of ISA) to Instrument Society of America, Dept. CP, 1319 Allegheny Ave., Pittsburgh 33, Pennsylvania.

Single and variable speed mixers described

Illustrated 4-page bulletin shows line of industrial mixers. Sizes range from ¼ to 100 hp and construction is of steel or alloy. Applications, construction features, and electrical specifications are covered.

Bul 531 is issued by Conn and Co., Dept. CP, 11 S. Marion St., Warren, Pa. When inquiring specify CP 6742 on handy form, pages 2 and 3.

Versatility with attachments on lift trucks explained

Versatility in fork truck lift operations through use of manufacturer's crate handling attachments designed for use with Spacemaster electric fork trucks outlined in recent literature.

With this crate handling device, cartoned material can be loaded, unloaded, transported and stacked without use of pallets, forks, or dunnage. At-

PYREX

GAUGE GLASS & CYLINDERS

furnished in any length or finish

● For fast service on Pyrex Tubular Gauge Glass, contact Swift! We can supply Tubular Gauge Glass or Cylinders from stock in any length or finish... 2 mm. O.D. to 7" O.D. ... for chemical, pharmaceutical or industrial applications. Write, wire or phone for immediate delivery.

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SWIFT LUBRICATOR COMPANY, INC., ELMIRA, N.Y.
330 Tenth St., San Francisco 3 • 140 Baylston St., Boston 16
807 Mateo St., Los Angeles

When inquiring check CP 6743 on handy form, pgs. 2-3

PROMPT SHIPMENT —Anywhere!

"Metalsmiths"
Stainless Steel
and Monel
Utensils

No matter where your plant, you can enjoy the durable service of "Metalsmiths" corrosion-resistant utensils. We've shipped utensils all over the world for more than 30 years, with utmost satisfaction. All items shown, plus beakers, stock pots, batch cans and shovels, in stock for immediate shipment.



WRITE FOR LATEST CATALOG — PRICE LIST

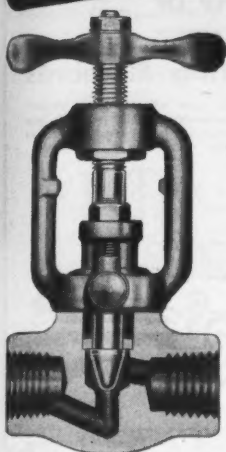
METALSMITH

Division of Orange Roller Bearing Co., Inc.
556 White Street Orange, N.J.

When inquiring check CP 6744 on handy form, pgs. 2-3

CHEMICAL PROCESSING


PRECISION REGULATION *Edward Instrument* Valves



New Edward Fig. 952 series instrument valves, so compact they fit limited spaces in such hook-ups as panel boards and manifolds, give precision regulation for meter, gage, regulator, by-pass and instrument lines of all types. Forged steel, globe or angle. Rated 6000 lb WOG, 1500 lb 850 F in carbon steel. Also in stainless steels with higher ratings.

- No bonnet joint to leak.
- Swing bolted gland for easy packing.
- Needle point stem, fine pitch threads for accurate regulation.

WRITE FOR NEW BULLETIN Bulletin 491, with full details, is yours for the asking.

Another  Product
Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY
1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 6745 on handy form, pgs. 2-3

**Quality
Fabrics**

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Chemical INDUSTRY
"The Preferred Source of Supply"

"SAN JUAN" Cotton Duck
NUMBERED DUCK
IN ALL WIDTHS AND WEIGHTS

Filter Twills • Chain Cloths
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Our technicians will gladly aid in creating industrial fabrics to your specification. We solicit your inquiries.



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INCORPORATED

62 WORTH STREET • NEW YORK 13
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MILLS AT: Lincolnton, N. C. and Roanoke, Ala.

When inquiring check CP 6746 on handy form, pgs. 2-3

FEBRUARY, 1954

NEW LITERATURE

tachment can handle cartons or crates up to 1500 lb capacity and can be made in tandem to handle four appliances simultaneously. Open-frame construction affords operator optimum visibility.

Literature on crate handling attachment is issued by Lewis-Shepard, Dept. CP, Watertown, Mass. When inquiring specify CP 6747 on handy form, pages 2 and 3.

Three-section brochure tells about ramps

Manufacturer's complete line of all-steel materials handling products are illustrated and described in 6-page folder.

Brochure is divided into three sections: first shows ramps in 15,000, 4000 and 2000 lb capacities; second section contains instructions for determining span of gap and height differential between car floor and top of platform; all-steel Pallet Stackers are illustrated in third section of folder.

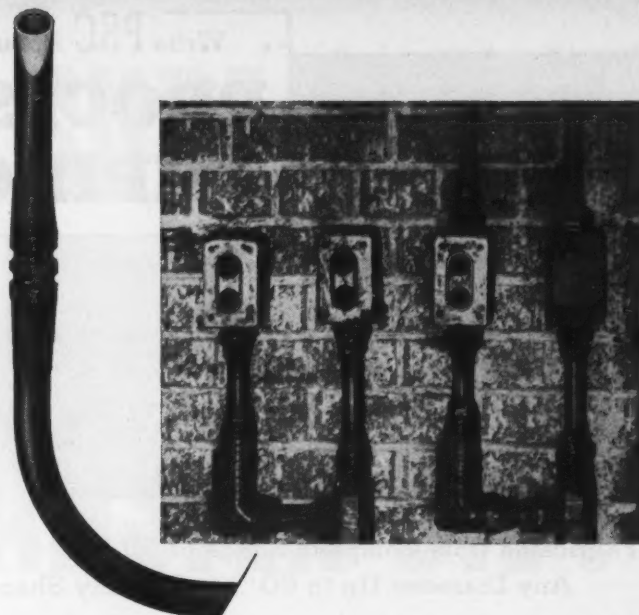
Brochure with specifications for all products is issued by Elizabeth Iron Works, Inc., Dept. CP, Box 360, Elizabeth B, N. J. When inquiring specify CP 6748 on handy form, pages 2 and 3.

Illustrate tramrail systems, give specs and data

Eight pages of illustrations and drawings are used to show manufacturer's line of tramrail systems in new catalog.

Cross sectional views with dimensions are given. Also described are tramrail trolleys and switches, jib and gantry cranes. Line illustrations and photos show details and installations of safety-type shielded electrification used in tramrail systems.

Cat #109 describing Ohio Tramrail systems is issued by The Forker Corp., Dept. CP, 2044 Random Rd., Cleveland 6, Ohio. When inquiring specify CP 6749 on handy form, pages 2 and 3.



Here's Proof Republic's "Dekoron-Coated" E.M.T. resists hydrochloric acid atmosphere

The conduit and switchgear shown above are subject to a corrosive atmosphere due to hydrochloric acid fumes at Huron Milling Company's plant in Harbor Beach, Michigan.

Within a six month period, the switchgear was replaced twice. After 15 months, the original "Dekoron-Coated" E.M.T. had not changed physically.

This is only one of the extra tough operating conditions in which "Dekoron-Coated" E.M.T. stands up. And one reason is the fact that this corrosion-resistant raceway gives double protection. It's a plastic armor of polyethylene extruded over zinc-coated steel. Couplings and connectors are protected by vinyl or plastic tape. Runs are protected from end to end.

The result: raceways that stay on the job longer in tough locations, are easy to install, and cost less because they last longer. Booklet DEK-1 lists the corrosive materials that can't affect "Dekoron-Coated" E.M.T., along with instructions for installation. Write for it.



REPUBLIC STEEL CORPORATION

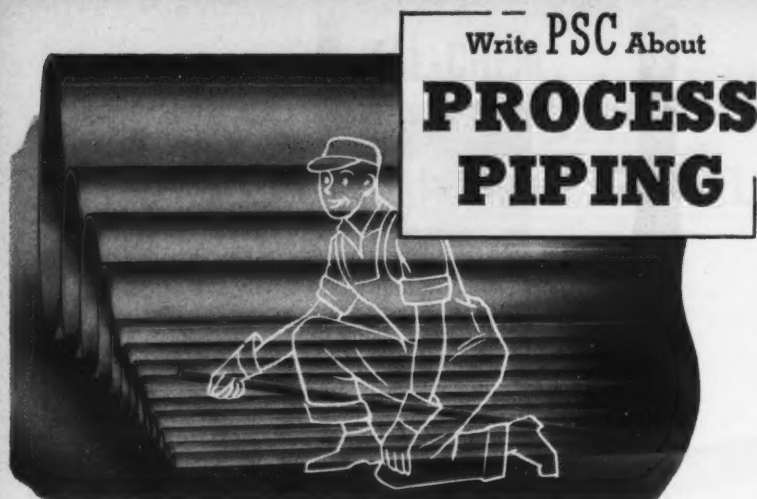
Steel and Tubes Division

205 East 131st Street, Cleveland 8, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



When inquiring check CP 6750 on handy form, pgs. 2-3



Fabricated from Complete Range of Alloys, Any Diameter Up to 60", and in Any Shape

PSC welded process tubing is furnished in any alloy whatsoever. This feature accounts for its wide application in meeting the unlimited variety of heat, corrosion, oxidation conditions in process plants.

Any diameter up to 60"; wall thicknesses to 3/8"; temperatures to 2200°. Precision fabrication of tubing assemblies is a specialty. Send b/p or write as to your needs.

THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.



Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints

When inquiring check CP 6751 on handy form, pgs. 2-3

THICK, TOUGH COATING for STRUCTURAL STEEL— TANK LININGS—

Resists...

SUBSTRATE	CONCENTRATION	TEMPERATURE
Hydrochloric Acid	Up to 37%	Up to 100°F
	Up to 25%	Up to 140°F
	Up to 15%	Up to 185°F
Sulfuric Acid	Up to 78%	Up to 100°F
	Up to 65%	Up to 122°F
	Up to 50%	Up to 185°F
Phosphoric Acid	Up to 85%	Up to 100°F
	Up to 50%	Up to 185°F



A High Solids Neoprene Base Coating Which Drastically Reduces Labor of Application

On the Inside of Tanks: Apply a 1/16" corrosion-resisting lining of low cost Neoprene 100 in 4-7 brush coats instead of the 10-20 required with ordinary neoprene linings. Spraying Neoprene 100 provides dry films of 5-10 mils per coat on vertical surfaces. Coatings cure at room temperature. Material and labor cost for a 1/16" tank lining including sandblasting is approximately \$1.10 per square foot on steel or concrete.

Neoprene 100 has a long pot life. Ready-to-use mixtures remain brushable 2-3 days.

On the Outsides of Tanks and on Structural Steel: Inexpensive, easy-to-use primers are available for applying Neoprene 100 to rusty or damp steel or over old paints. No expensive surface preparation is necessary.

See Bulletin 700 for details.



When inquiring check CP 6752 on handy form, pgs. 2-3

NEW LITERATURE

Covers wide range of indicators

Illustrated publication of 22 pages describes design and operating accuracy of indicators for pH, temperature, electrolytic conductivity. Catalog is so arranged that instrument may be found according to application. Detailed information about operation is included.

Cat ND42 is issued by Leeds & Northrup Co., Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 6753 on handy form, pages 2 and 3.

Catalogs sheaves, belts, and drives

Catalog contains necessary selection tables for V-belts and sheaves, as well as dimensional illustrations of the various types of power transmission equipment offered by manufacturer. (56 pages)

Cat V-1000 is available on letterhead request to Pyott Foundry and Machine Co., Dept. CP, 328 N. Sangamon St., Chicago 7, Ill.

Three-ton capacity lift truck outlined in folder

Two-color, four-page folder gives details on 6000 lb electric-powered fork truck.

One page of engineering drawings gives detailed specifications. Facing page details such operating and construction features as: hoist speeds, tilt speeds, frame, uprights, drive unit, brakes, trail axle, motors, controls. In addition, application photos show truck handling bagged goods, castings, palletized coils, etc.

Folder describing Type F-31T electric powered fork truck is issued by Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio. When inquiring specify CP 6754 on convenient Reader Service slip between pages two and three.

Driving Made Safer...

WITH THE HELP OF

"FOLDED-and-FORMED"

Heating Elements

Windshields in the new cars made by one of the "big three" are larger and more curved for increased visibility, with the curving accomplished in equipment electrically heated by Trent Patented "Folded-and-Formed" Elements.

This is but one of hundreds of different applications for these amazingly efficient, economical heating elements... with the 5-year guarantee.

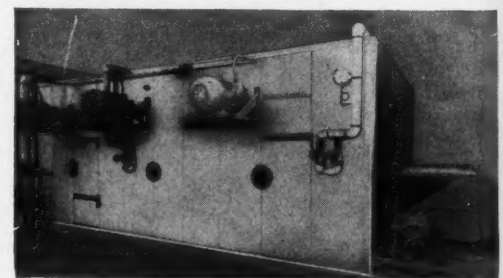


What is YOUR Heating Problem? Write for "Folded-and-Formed" literature, or consult our Engineering Department.

STANDARD RACKS — in 12" x 12" sections, arranged vertically or horizontally, singly or in multiples, to provide any desired K. W. at temperatures to 1350°F. Also, **CUSTOM-BUILT RACKS** — in variety of sizes.



When inquiring check CP 6755 on handy form, pgs. 2-3



"NATIONAL" CONVEYOR DRYER

Engineered to assure unequalled uniformity and speed under critical drying conditions, and to provide the lowest possible cost per unit of product dried.

Sizes range from small, compact 8' x 12' units to 300' long tunnel type constructions. Single or multiple apron — perforated, solid, wire mesh or slat. Cross, vertical, through or reverse circulation, or any combination.

Special features include flexibility of operation, ease of maintenance, and unit construction for economical future expansion.

Write for Complete Information

Chemical Dryers of All Types and Sizes



Special Heating Drying Equipment

THE NATIONAL DRYING MACHINERY CO.

2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 6756 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Illustrates precision machined plastic components

Descriptions and illustrations of various types of precision machined plastic components offered by manufacturer are presented in four-page brochure. Plastics such as Teflon, Kel-F, nylon, Formica, Rexolite, polystyrene, polyethylene and laminated phenolics are described. Parts illustrated are held to tolerances of .001" in production, and are made in standard sizes or to specification.

Brochure TPM 2516 is available from Tri-Point Mfg. & Developing Co., Dept. CP, 401 Grand St., Brooklyn 11, N. Y. When inquiring specify CP 6757 on handy form, pages 2 and 3.

Features performance data on explosion-proof fixtures

Four-page bulletin describes components, performance data, and methods of installing or relamping for any of manufacturer's EV series explosion-proof and weather resistant fixtures. This series has been designated for use at locations made hazardous by concentrations of ethyl ether vapors or gasoline, petroleum, naphtha, alcohols, acetone, lacquer solvent vapors and natural gas.

Bul Sec. K is issued by Crouse-Hinds Co., Dept. CP, Wolf and Seventh North Sts., Syracuse 10, N. Y. When inquiring specify CP 6758 on handy form, pages 2 and 3.

Describes special features of plastic container filler

Illustrated 2-page bulletin describes plastic container filler. Unit handles all standard shapes and sizes from fractional ounces to gallon as well as most private mold shapes. Features, specifications and capacity ranges are covered.

Bul 153 is available from Horix Mfg. Co., Dept. CP, Corliss Station, Pittsburgh 4, Pa. When inquiring specify CP 6759 on pages 2 and 3.

Packages marked without production time loss

Twenty different types of package code-dating and imprinting machines are shown in actual operation on production lines in 4-page brochure. Machines vary in complexity from simple hand-operated marking roller to fully-automatic printer which prints complete display copy in one or two colors to five sides of cases as part of the packaging sequence.

"Machines to Mark Whatever You Make" is issued by Adolph Gottscho, Inc., Dept. CP, Hillside 5, N. J. When inquiring specify CP 6760 on handy form, pages 2 and 3.

ARE YOU SURE OF THE EFFICIENCY OF YOUR HEAT TRANSFER OIL?

Sun's New Check List Will Help You Analyze It

Your answers to 15 basic questions will give our heat transfer specialists the data they need to study your system and make recommendations. To have a representative go over the check list with you, contact your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. CP-2.

Sun Heat Transfer Oils give you

- High thermal conductivity
- High heat-carrying capacity
- Low vapor pressure and high initial boiling point
- Easy circulation with any pump normally used in oil-type heat transfer systems
- High thermal stability

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY

PHILADELPHIA 3, PA. ♦ SUN OIL COMPANY LTD., TORONTO & MONTREAL



When inquiring check CP 6761 on handy form, pgs. 2-3

COLE ALUMINUM TANKS

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5,000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG. CO.
NEWNAN, GA. Established 1854



TANKS TOWERS CYLINDERS VESSELS

When inquiring check CP 6762 on handy form, pgs. 2-3

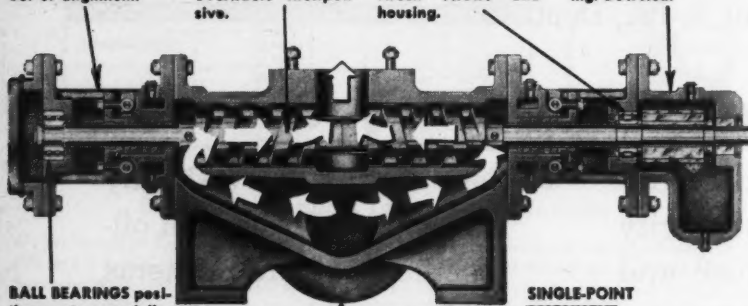
MOST ADVANCED SCREW PUMP FOR NON-LUBRICATING FLUIDS

RUGGED BRACKETS
will not twist rotors out of alignment.

INTERCHANGEABLE ROTOR SCREWS make overhauls inexpensive.

ROLLER BEARINGS prevent contact between screws and housing.

CENTER-LINE SUPPORTED gear housing. Doweled.



BALL BEARINGS position rotors axially, permit expansion.

SINGLE-POINT ALIGNMENT eliminates rotor distortion, speeds servicing.

Sier-Bath

External Gear and Bearing
BRACKET TYPE

SCREW PUMPS

32 SSU to 1,000,000 SSU; 1-700 GPM; 1000 PSI for viscous liquids, 500 PSI for water. Direct-connected up to 1800 RPM. Materials and construction adapted to meet any requirements. **Sier-Bath Gear & Pump Co., Inc.**, 9260 Hudson Blvd., North Bergen, N. J.



Call Your Sier-Bath Pump Representative
... Send for Bulletin SE-3

Founded 1908

Member A. G. M. A.

Sier-Bath "Gears" and "Hydrex" Pumps for lower capacities and pressures... also mtrs. of Precision Gears & Flexible Gear Couplings

When inquiring check CP 6763 on handy form, pgs. 2-3

NEW LITERATURE

Describes controls for heating

Numerous instruments and controls for space heating are contained in 8-page illustrated booklet. Printed in two colors, booklet shows photographs, schematics, and installations.

F 6166 is issued by Barber-Colman Co., Dept. CP, Rockford, Ill. When inquiring specify CP 6764 on pages 2 & 3.

Outlines production tests of metal abrasives

In answer to "How?", this bulletin deals with a simple method of running a production test of metal abrasives and examples of data, plotting, and evaluation sheets are included.

Technical Bul 6 is issued by Harrison Abrasive Div., Metals Disintegrating Co., Inc., Dept. CP, Elizabeth B, N. J. Specify CP 6765, pages 2 & 3.

Offer insulation heat loss estimate sheet

Four-page heat loss estimate sheet, supplemented by reference graphs and tables, is designed to aid in determining heat losses from either flat surfaces or piping and in selecting optimum insulation thickness.

Copies of Heat Loss Estimate Sheet are available by remitting 30c per dozen direct to Industrial Mineral Fiber Institute, Inc., Dept. CP, 441 Lexington Ave., New York 17, N. Y.

Keeps kiln ends cool, round, rigid

Illustrated 4-page bulletin describes air-cooled kiln designed to keep discharge end of kilns cool, round and rigid. Diagrams demonstrate how kiln end eliminates overheating and consequent warping and distortion at discharge end.

Bul 07B8040 is issued by Allis-Chalmers Manufacturing Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. Specify CP 6766, pages 2 & 3.

thousands of users **PROVE**
"HI-TEMP"
C-5 THREAD COMPOUND
IS BEST FOR ALL STUD THREADS
and STAINLESS STEEL APPLICATIONS

- ✓ speeds up dis-assembly time
- ✓ prevents stud breakage
- ✓ eliminates pitting of stainless steel

NO MORE FROZEN OR GALLED STUDS
EVEN AT
1800° F

Let us **SEND** you a
FREE SAMPLE
so you can **PROVE** to YOURSELF
that C-5 will lick your toughest
stud breakage problems!

To assure easy maintenance on products having threaded assemblies many leading product engineers have specified the use of Fel-Pro C-5 as an anti-seize coating on stud threads prior to final production line assembly. Fel-Pro's exclusive Colloidal-Copper formula allows for easy separation and reduces stud breakage of threaded assemblies after long exposure to extreme temperatures. It eliminates pitting of stainless and alloy steel even where dissimilar metals are joined. Conduct your own tests with C-5 "Hi-Temp" at our expense. Write for Free Sample and complete data sheet TODAY!



FELT PRODUCTS MFG. CO. 1515 Carroll Ave., Chicago 7, Ill.

When inquiring check CP 6767 on handy form, pgs. 2-3

Protect

Expensive GAGES

Sprague Shut Off Valves automatically cut out gages and other pressure-sensitive instruments when fluid pressures go beyond their operating limits. Automatically open when pressure is again within approx. 80% of set cut-out points. Available for any pressure setting between 10 PSI and 5000 PSI.

Save valuable man hours. Eliminate opening and closing manually operated shut off valves. Supplied with standard pipe thread connections, also available with AN tube fittings. Body is 1½" aluminum hexagon stock. Length 5½". Bronze or stainless steel bodies also available. Easy to install. Thousands in use. Write for bulletin.

SPRAGUE
Engineering and Sales Corp.
1144 WEST 135TH ST., GARDENA, CALIF

When inquiring check CP 6768 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Hard facing data sheets

A series of engineering data sheets present information pertaining to the application of nickel-base and iron-base hard facing and Spraywelding alloys that resist corrosion, abrasion, impact, and galling. Typical chemical industry equipment applications are described in detail including procedures, part sketches, requirements, and results.

Data sheets on hard facing are issued by Wall Colmonoy Corp., Dept. CP, 19345 John R St., Detroit 3, Mich. Specify CP 6769, pages 2 & 3.

Quick "look-see" at ion exchange

Properties and some uses of most of manufacturer's ion exchangers (equipment and resins) are summarized in 12-page, illustrated bulletin. The literature details a general history of ion exchange engineering, provides data on proper selection of ion exchangers and lists general applications in treatment of water and special problems associated with recovery of valuable metals from solutions, streptomycin purification, sugar refining, separation of rare earths, etc.

Bul 2508 is issued by The Permutit Company, Dept. CP, 330 W. 42nd St., New York 36, N. Y. When inquiring specify CP 6770 on handy form, pages 2 and 3.

Bulletins give answers to bag-packing problems

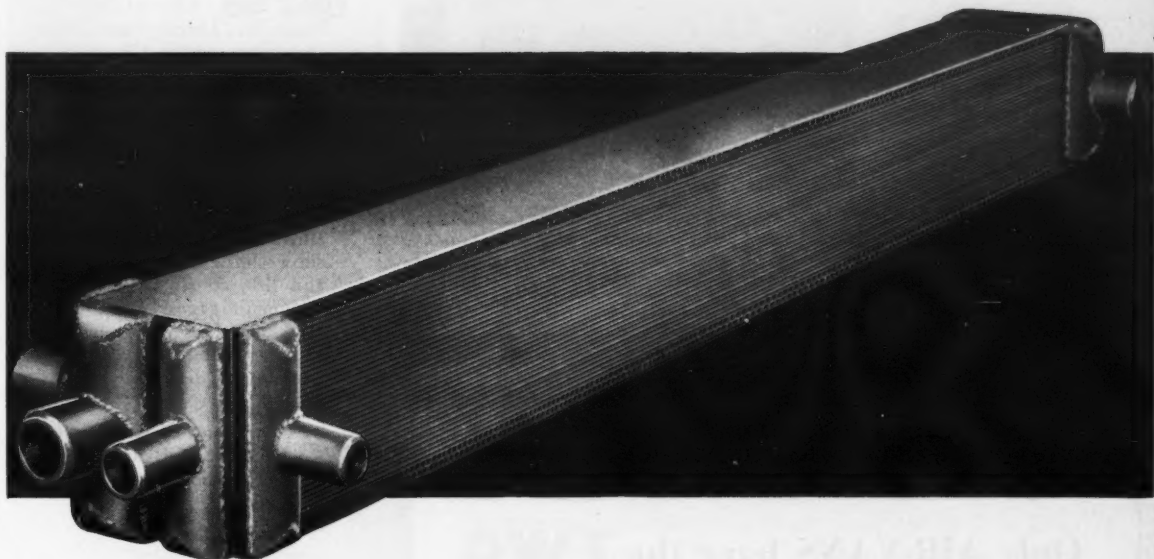
Three separate bulletins describe bag-packing equipment. Units are a single spout packer designed to fill valve bags, open-mouth bags, or drums with powdered material; a dual spout packer for the same purpose; and an attachment for adapting valve-type packers to fill barrels, drums, or open-mouth containers. Models pack at rate of one cubic foot per spout in five seconds.

Bul on Model 1-5-D (dual spout), 1-5-V (single spout), and attachments are issued by H. L. Stoker Co., Dept. CP, 111 S. College Ave., Claremont, Calif. When inquiring specify CP 6771 on handy form, pages 2 and 3.

Illustrates construction of recorder

Special 2-color booklet fully illustrates and describes features of electric recording potentiometer. Features of design, such as interchangeable parts and universal slide wire, are shown. Bul P-2-A is issued by Weston Electrical Instrument Corp., Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. When inquiring specify CP 6772 on handy form, pages 2 and 3.

How to take the plus cost out of minus temperatures even at -350°



In many applications, TRANE Brazed Aluminum Heat Exchangers have licked the problem of excessive cost in low temperature heat transfer. Fabricated entirely of aluminum, they take full advantage of aluminum's higher thermal conductivity, its improved strength and high ductility at low temperatures. This, plus the inherently higher performance characteristics of the TRANE Brazed Aluminum Surface design, produces a heat exchange unit that is lighter, more compact, far more efficient—and far less costly—than conventional equipment.

In many instances, TRANE Brazed Aluminum Heat Exchangers have taken only *one-third* the space, weighed only *one-fourth* as much, as conventional exchangers. Yet, for all their light weight and compactness, these rugged units have the ability to operate at working pressures up to 450 lbs. p.s.i. at lowest temperatures.

Because of their economy, and because of their

ability to operate dependably at temperatures as low as -350 degrees and still pack as much as 450 square feet of surface into a single cubic foot of lightweight space, TRANE Brazed Aluminum Surfaces are ideally suited for low temperature applications such as ammonia, oxygen, helium, nitrogen and argon processing.

For that matter, TRANE Brazed Aluminum should be your first consideration for any difficult heat transfer application requiring *close temperature* approaches, *multi-stream* exchange, or *low temperatures*.

If you have a heat transfer problem, now is the time to call in TRANE. Our 30 years' experience in various types of heat transfer, and our engineering facilities, are always at your disposal. And for your files, get your copy of "Extended Surface Heat Transfer Equipment," showing the wide range of design possibilities. Simply contact your nearest TRANE Sales Office or write to TRANE, La Crosse, Wis.

TRANE brazed aluminum heat transfer surfaces

The Trane Company, La Crosse, Wis. • East. Mfg. Div., Scranton, Penn. • Trane Co. of Canada, Ltd., Toronto • 87 U.S. and 14 Canadian Offices.
MANUFACTURING ENGINEERS OF AIR CONDITIONING, HEATING, VENTILATING AND HEAT TRANSFER EQUIPMENT

BULK MATERIALS STORAGE?

...here's the answer
to your problems...

Kalamazoo GLAZED TILE INDUSTRIAL STORAGE BINS

Any shape or size engineered to meet your requirements... heavy, monolithic construction... smooth-surfaced... weatherproof, fire-proof, corrosion-proof... contents protected against freezing, condensation, spoilage, contamination... appearance that ties in with modern industrial buildings... long-lived.

Send for complete details...

INDUSTRIAL STORAGE BIN DIVISION

Kalamazoo TANK and SILO COMPANY

245 HARRISON ST., KALAMAZOO, MICHIGAN

When inquiring check CP 6773 on handy form, pgs. 2-3



Sand handling installation at large Ohio foundry. Kalamazoo design and construction provides more usable space than ordinary multiple bins.

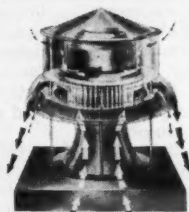
Only AIR-VANS have the **TWO** Big Factors in Industrial Ventilation

SAFE MOISTURE and FUME REMOVAL

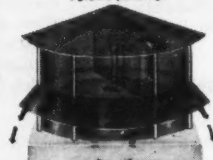
Motor out of airstream is only part of this protection. Fresh clean air is constantly drawn through the motor hood creating an air curtain around the motor shaft which absolutely prevents fumes from entering the housing while the unit is in operation.* This eliminates most special winding motors.

Positive Air Removal with Gallaher Scroll Effect Design*

Where high slot speeds must be maintained Gallaher Air-Vans with patented scroll effect design are generally the answer. Design research has shown that without this feature efficiency against even 1/4" S.P. is impossible. With this feature, Gallaher units develop up to 4" static pressure and 65,000 CFM. Ratings have been certified in an independent laboratory under the direction of a nationally recognized authority.



Gallaher Air-Van Direct Drive 150-11,000 CFM S.P. to 4.2" Patents 2188741 2526290. Patents pending.



Gallaher Belt Drive 5,000-65,000 CFM S.P. to 4"

The GALLAHER Company

4108 DODGE STREET

OMAHA 3, NEBRASKA

*patented exclusive feature.

When inquiring check CP 6774 on handy form, pgs. 2-3

NEW LITERATURE

Details working principles of all purpose pump

Working principles of all purpose pump, and switch operation are detailed in three-color brochure. Each phase of operating control is shown by drawings. Pump features an improved liquid level control switch having greater simplicity.

Circular 12 is issued by Kenco, Inc., Dept. CP, 1125 North Ridge Rd., Lorain, Ohio. When inquiring specify CP 6775 on handy form, pages 2 and 3.

Lists factors, data for SR-4 gage

Illustrated 12-page booklet shows types of strain gages and lists considerations in selection of gages. Bulk of the book is taken up with tables showing nominal resistance, gage factor, dimensions, etc.

Publication S-E 7-53 is issued by Baldwin - Lima - Hamilton Corp., Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 6776, pages 2 & 3.

Shows radioactivity measuring level

Instruments for measurement of level and density of liquids are described in 4-page bulletin.

Data sheet W1893.4-2 is issued by The Bristol Co., Dept. CP, Waterbury 20, Conn. When inquiring specify CP 6777 on handy form, pages 2 and 3.

Tabulates data for actuators

Actuators for all types (gate, plug, diaphragm, butterfly, pulp stock, sluice gate, and damper) of valves are pictured and explained in 4-page, 2-color bulletin. Bulletin also includes three tables of actuator data.

Bul 3000 is issued by Ledeen Mfg. Co., Dept. CP, 1600 S. San Pedro St., Los Angeles 15, Calif. When inquiring specify CP 6778 on handy form, pages 2 and 3.

Corrosion-Resisting
INCO-CAST FITTINGS
Write for catalog price list!

Protect product purity	Unions	Available in Monel®, Nickel and Inconel®	90° Elbows
Crosses	All standard types Pressure tested	Plugs	Full range of sizes Economical in cost
Withstand high and sub-zero temperatures	Stub ends	Strong, sound, tough castings	Flanges
Reducing tees	Yours for the asking—Catalog Price List		

The International Nickel Company, Inc.
67 Wall Street
New York 5, N. Y.

When inquiring check CP 6779 on handy form, pgs. 2-3

TEFLON

by ETHYLENE

HIGHEST STANDARD OF QUALITY

Ethylene specializes in producing a wide variety of Teflon forms which are stocked in large quantities to assure quick shipment. Engineering experience is available to help solve your problems.

EXTRUDED OR MOLDED RODS, TUBES, AND SPECIAL SHAPES
• STRESS RELIEVED OR HIGH TENSILE SHEETS AND MOLDINGS
• PRECISION MACHINED COMPONENTS • FILLED PRODUCTS

Send for new illustrated Catalog 53 with stock and price lists.

Pioneers and Specialists in TEFLON products

ETHYLENE CHEMICAL CORPORATION

245 Broad St. • Summit, New Jersey
*Du Pont Trade-Mark for tetrafluoroethylene resin

When inquiring check CP 6780 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Issues safety data material on ortho-dichlorobenzene

Safety data on ortho-dichlorobenzene, a chemical widely used as solvent and intermediate for other chemical products, is contained in 12-page booklet. Complete recommendations for safety procedures to be followed in loading and unloading, storing, handling, and waste disposal are given. Section on health hazards and their control outlines proper personal protective equipment to be used and first aid measures required in event of accidental contact with skin and eyes.

Copies of SD-54 are available at 25 cents each from Manufacturing Chemists' Association, Dept. CP, 246 Woodward Building, Washington 5, D. C.

Technical data featured in feeder bulletin

Technical data including feed range, capacity, and density of typical materials are featured in four-page, two-color bulletin. It also describes and pictures gravimetric feeder and accessory equipment. Bul 30-K4 is issued by Omega Machine Co., Dept. CP, Div. of B-I-F Industries, Inc., 345 Harris Ave., Providence 1, R. I. When inquiring specify CP 6781 on handy form, pages 2 and 3.

Handy chart helps choose correct plate magnet

Single sheet chart aids engineers in selecting most efficient plate magnets to separate tramp iron from materials conveyed in chutes.

Face of chart is made up of diagrams and tables with explanatory captions. Explicit instructions are given to determine strength and size of magnet to incorporate in chutes handling average free-flowing material.

Plate Magnet Selector Chart is issued by Eriez Manufacturing Co., Dept. CP, 1945 Grove Drive, Erie, Pa. When inquiring specify CP 6782 on handy form, pages 2 and 3.

Occupational safety posters shown in 1954 directory

Illustrated 72-page directory reproduces in miniature 744 occupational safety posters available from the National Safety Council. Posters are designed for use in various industries and related occupations. Posters covering home, school, and farm safety are not included in this directory.

"Occupational Safety Posters" is available by remitting 50 cents to National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill.

CERAMIC ENGINEER REPORTS:

Throughput of slip trebled with Sweco "3-D" Separator

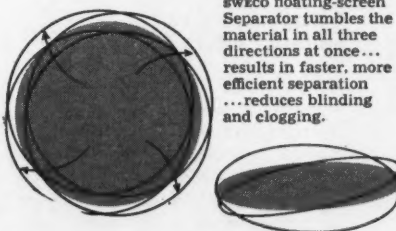
Screening Finished Casting Slip at Universal-Rundle Corp., Redlands, Calif. 2000 gal. per hr. of slip of 1.8 specific gravity through 80 mesh screen. 48-inch sweco Separator.

D. G. BRANT
nationally
known
ceramic
engineer



New "3-D" screening action

The unique "spiral-gratory" action of the sweco floating-screen Separator tumbles the material in all three directions at once... results in faster, more efficient separation... reduces blinding and clogging.



The performance of sweco Separators is "little short of phenomenal," according to a report presented by D. G. Brant at both the National and Pacific Coast meetings of the American Ceramic Society. He gave throughput figures of sweco Separator installations in numerous ceramic plants, for example:

Kaolin Slurry—250 gal. per min. of slurry, containing 40% solids—through 150 mesh screen. 48-inch sweco Separator.

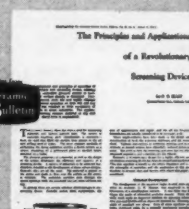
Slip with High Talc Body—1.5 specific gravity—600 gal. per hr.—through 120 mesh screen. 48-inch sweco Separator.

Slip with Talc-pyrophyllite Body—1.35 specific gravity—1800 gal. per hr.—through 100 mesh screen. 48-inch sweco Separator.

If you have a screening problem

Find out how sweco Separators can increase your screening efficiency, lower your screening cost. sweco will make a detailed analysis and recommendation without cost to you. sweco Separators are sold on a guaranteed performance basis.

Send for a copy
of this important
report



SEPARATOR DIVISION, Dept. 18-3
Southwestern Engineering Company,
4800 Santa Fe Avenue, Los Angeles 58
JEfferson 7131—Cable Address: SWECOLA

Please send reprint of
D. G. Brant's report in the
Ceramic Bulletin.

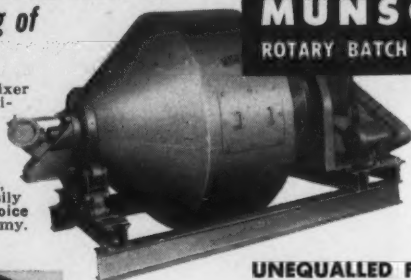
Name _____
Firm _____
Address _____

When inquiring check CP 6783 on handy form, pgs. 2-3

MIX IT *better* ... MIX IT *faster* with a

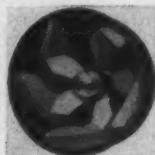
... the **TUMBLING ACTION** mixer for intimate blending of dry ingredients

A Munson Rotary Batch Mixer provides faster, more intimate blending of dry ingredients—yet will not stratify ingredients or alter characteristics of basic components. Its famous 7-way mixing action, plus low operating costs easily makes the Munson first choice for performance and economy.



MUNSON
ROTARY BATCH MIXER

**EXCLUSIVE
MULTIPLE-
BLENDING
ACTION!**



Lifters continuously cut out and lift ingredients as drum slowly revolves. Rotating cone tumbles stock to center. Conveyor flights on mixer shaft also agitate stock back to center—where mixing cycle repeats. Empties completely after every mix.

Munson Rotary Batch Mixers can be fitted with internal spray for introduction of limited amount of liquid. Mixers range in capacities from 40 to 200 cu. ft.—for working floor, overhead or basement installation.

Skilled Munson engineers will be glad to help you solve your mixing problem. Write us today...

Other famous **MUNSON** products:
Rotary Knife Cutters, Hammer Mills,
Attrition Mills, Rotary Crushers...

MUNSON MILL MACHINERY CO. Dept. P-254 Utica, New York

When inquiring check CP 6784 on handy form, pgs. 2-3



One of many filter presses for clarifying and for recovery, washing and partial drying of filter cake in fine chemical manufacture.

More **VERSATILE • EFFICIENT
WIDELY APPLICABLE**

- Economical in first cost and in operation.
- Applicable for almost any filterable material.
- Capable of recovering solids, clarifying, washing, extracting, thickening, melting, redissolving—any or all in one equipment.
- Operate at any pressure or temperature, in any capacity.



Get
Catalog 52.

Shriver Filter Presses

T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.
Filter Presses • Filter Media • Diaphragm Pumps

When inquiring check CP 6785 on handy form, pgs. 2-3

NEW LITERATURE

**Catalogs gas or oil
firing boilers**

Descriptions of features, detailed listings of ratings, dimensions, standard equipment and trim are in 6-page catalog. Boilers are for high and low pressures and designed for oil or gas firing. They can be used with any quality oil, gas or combination oil-gas burner to form a complete boiler-burner unit.

Cat 98 is available from Kewanee-Ross Corp., Dept. CP, Kewanee, Ill. When inquiring specify CP 6786 on handy form, pages 2 and 3.

**Flexibility of paint mill
highlighted**

Illustrated 4-page technical type bulletin tells how one mill can be used for floating of fixed center roll operation. Also included is description of roll pressure gages which indicate: pounds of roll pressure at each adjustment point, take-off knife pressure, and roll water temperature at inlet and outlet points.

Bul on models 661-VF and 662-VF is issued by J. M. Lehmann Co., Inc., Dept. CP, Lyndhurst, N. J. When inquiring specify CP 6787 on handy form, pages 2 and 3.

**Refrigeration units
bulletins offered**

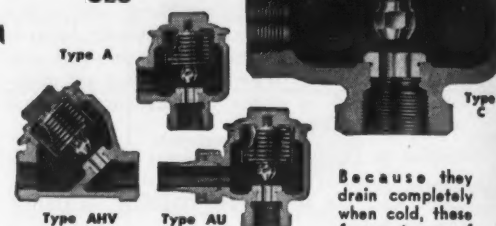
Illustrated 4-page bulletins for three models of Freon-12 refrigeration units contain complete specifications and performance data. Models are equipped with either air cooled, water cooled, or air-water cooled condensers. Units include a compressor, condenser, electric motor, drive controls, and auxiliary equipment. Size range from 3/4 to 3 hp.

Bul C-1100-B42B (air cooled), Bul C1100-B43b (water cooled), Bul C-1100 - B48 (air - water cooled) are issued by the Worthington Corp., Dept. CP, Holyoke, Mass. When inquiring specify CP 6788 on handy form, pages 2 and 3.

NICHOLSON MAKES

FREEZE-PROOF Steam Traps

for Every Plant
Use



Because they drain completely when cold, these four types of

Nicholson steam traps are positively freeze-proof. Can be freely installed outdoors. Universally recommended for use in lines which need not be in continuous use during cold weather, because they are freeze-proof and because their 2 to 6 times average drainage capacity results in minimum heat-up time. The non-air-binding feature of Nicholson traps also notably facilitates heat transfer in severe weather. Sizes 1/4" to 2"; pressures from vacuum to 250 lbs.

BULLETIN 853
181 Oregon St.
Wilkes-Barre, Pa.

W. H. NICHOLSON & CO.

TRAPS • VALVES • FLOATS

When inquiring check CP 6789 on handy form, pgs. 2-3

NEW "SHORT" PROOF Clepco FUSED QUARTZ RADIANT HEATERS

Replace troublesome INFRA-RED heaters with the amazing Clepco "short" proof heaters and enjoy the advantages of better performance and long life service. Here's why!

- Heavy duty, nickel-alloy heating element protected against sagging and short circuits by fused quartz sheath.
- Sheath is totally transparent to radiation. Provides maximum heating acceleration.
- Effective radiant temperature of 1900° F. far-infra-red. Ideal for oven temperatures up to 1600° F.
- No heat accumulation in sheath. No loss thru air flow over sheath.
- Special units provided for use in presence of flammable volatiles.
- Inert to most corrosive vapors.
- Low initial cost. Low operating cost. Maximum economy.

Write for Bulletin R-20.



CLEVELAND PROCESS COMPANY

1965 EAST 57th STREET • CLEVELAND 3, OHIO

When inquiring check CP 6790 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Shows manufacturer's line of floor trucks, dollies

Three-color, 12-page catalog shows 50 different models of floor trucks, 12 types of dollies, and 16 styles of casters in addition to a new combined tractor-trailer and towline order picking system for warehouses. Specifications are given on many standard sizes available on each item.

Junior Cat 54G is issued by The Nutting Truck & Caster Co., Dept. CP, Faribault, Minn. When inquiring specify CP 6791 on handy form, pages 2 and 3.

Illustrated gear pumps — standard & special

Design, construction, and operation of standard and special gear pump units are described and illustrated in bulletin. Pumps handle viscosity ranges from 30 to 10 million SSU; capacities from 1 gph to 1000 gpm; pressures to 3500 psi. (24 pages, 2 colors)

Bul 17-A is issued by Dept. P-E, Schutte and Koerting Co., Dept. CP, Cornwells Heights, Bucks County, Pa. When inquiring specify CP 6792 on handy form, pages 2 and 3.

Tells about low-temp evaporator process

Brochure contains details of low-temperature evaporator. It features full color diagrammatic flow chart showing complete indirect thermocompression or secondary recompression evaporation process, and discusses its application to concentration of insulin and biochemicals at low temperatures.

Bul 300 is available from Mojonier Bros. Co., Dept. CP, 4601 W. Ohio St., Chicago 44, Ill. When inquiring specify CP 6793 on handy form, pages 2 and 3.

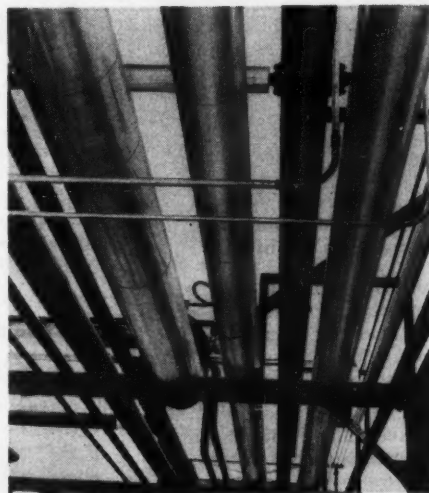
For more information on product at right, specify CP 6794 ... see information request blank between pages 2 - 3.



Refineries cut maintenance on insulated lines by switch to new low-cost aluminum jacketing

"It cut jacketing application costs, and we expect it to last for years," report engineers at refineries everywhere after testing Childers Aluminum Jacketing on their insulated lines. This new Oklahoma refinery used Childers 100% — on towers and vessels (in heavy weight) as well as on lines. It is flexible and easy to put on, and this 33 alloy aluminum is tough and weather-resistant, even in corrosive industrial atmospheres. This is the first and only jacketing especially engineered for process plants and power installations.

At least 567 processing plants have installed and tested this new Childers Aluminum Weatherproof Jacketing during the last three years. You can examine its advantages for your plant by writing for a free sample. Address Childers Manufacturing Co., Dept. LP-7, 3620 W. 11th St., Houston 8, Texas.



These lines are insured for years against wear and weather. They'll never need painting because Childers Jacketing gives them all the advantages of appearance and long life that come only with weather-resistant aluminum. Yet this specially engineered jacketing costs far less than would heavy aluminum sheets.

Advertisement



As shown here, Childers Jacketing can be attached with no more tools than a pliers and a wooden wedge. No expensive shop work or pre-forming are necessary. Several methods of attaching are available, but aluminum bands shown here are probably best and cheapest. Because this jacketing is so easy to handle and so simple to attach, it cuts installation costs way down.



This is how the flexible, easy-to-handle Childers Jacketing arrives at the job site. It is in convenient rolls 4 feet wide and 100 feet long—just right for one man to handle—and is available either with or without a moisture barrier attached on the back of the .006" aluminum "skin". It can be cut to proper lengths using any flat table and a straight-edge.

Under CMP regulations, Childers is a Class B product, the use of which is not restricted.

DRYERS

THE DehydrO-Mat* AN ENTIRELY NEW CONCEPT— OUTSTANDING IN OPERATION



- 1—Designed primarily for heat-sensitive materials or products containing internal moisture.
- 2—Varying cylinder diameters control product flow for longer retention time, allowing internal moisture in each particle to diffuse and evaporate.
- 3—Long retention time permits use of lower temperatures on heat-sensitive materials.
- 4—Top capacity unknown! Under limited raw material supply, the DehydrO-Mat dried over 30 tons per hour of organic chemicals from 55% to 8% moisture. Write for DehydrO-Mat details today. * Patents Pending

EDW. RENNEBURG & SONS CO.
BALTIMORE 24, MARYLAND, U. S. A.

CONTINUOUS COOKERS, PRESSES, COOLERS, EVAPORATORS • OIL BURNERS • DEODORIZING EQUIPMENT

When inquiring check CP 6795 on handy form, pgs. 2-3

NOW...Control Slurries as well as liquids with this NEW Kates Regulator

Here, in the compact, self-contained Kates Type SA regulator is the most effective, most accurate—yet lowest-cost means to control the flow of light slurries and liquids.

Acting on a constant differential between inlet and outlet pressures, the sensitive Kates Type SA quickly reacts to any change in this differential, automatically making the adjustment necessary to keep flow constant. Accuracy of the regulator is $\pm 3\%$, despite variations in inlet-to-outlet pressures of as much as 125 psig.

The unique design of the Type SA enables it to handle light slurries, many suspensions, hot tar and similar solutions without time lag or "hunting" for the proper adjustments. Installation, inspection, cleaning and maintenance are all quickly and easily accomplished without special tools.

Kates Type SA Regulators are available with flow capacities ranging from the tiny 2-10 GPM to the larger 100-500 GPM, and may be furnished in No. 316 stainless steel trim and valves.



Write for literature
and complete details.

kates co.

430 WAUKEGAN RD. • DEERFIELD, ILLINOIS
Representatives in Principal Cities

When inquiring check CP 6796 on handy form, pgs. 2-3

NEW LITERATURE

Shows essentials of good mixer

Illustrated 6-page bulletin shows manufacturer's line of heavy duty mixers. Designed for fast, thorough dispersion mixing and kneading, mixers have counter-rotating agitators with 3 to 2 ratio and are operated with push button controls. Bulletin contains in-use photos, details, and specifications.

Bul 600 is issued by J. H. Day Co., Inc., Dept. CP, 1144 Harrison Ave., Cincinnati 22, Ohio. When inquiring specify CP 6797 on handy form, pages 2 and 3.

Handbook of industrial combustion data

Handbook contains 168 pages on industrial heat processing applications and should be of interest to those concerned with selection, supervision, operation and maintenance of oil and gas combustion equipment as applied to industrial furnaces, ovens, kilns, driers, heaters, kettles, stills, calciners and similar equipment. Useful technical data is arranged in concise and practical form and amply illustrated.

"Hauck Industrial Combustion Data" 3rd Ed., is issued on letterhead request to Hauck Mfg. Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y.

Suggestions for solution of steam trap problems

This booklet contains 38 pages of general information on steam traps and their application, including an informative section on solving steam trap problems.

Complete description of manufacturer's line of steam traps is included, plus charts, tables, and diagrams helpful in the selection of correct traps for various pieces of steam-using equipment.

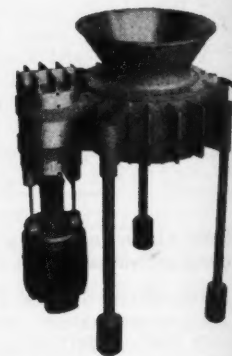
Form 151 is issued by The V.D. Anderson Co., Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio. When inquiring specify CP 6798 on pages 2 and 3.



A manufacturer of glazed tile says, "Tile losses due to iron contamination have been almost completely eliminated through magnetic cleaning of body constituents accomplished by

FERRO FILTER

Magnetic Separators

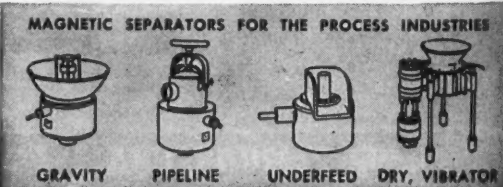


Are you getting complaints from customers about fine magnetic particles or tramp iron mixed in any powdered or granular materials you ship. Install FRANTZ DRY FERROFILTERS and get rid of your iron contamination troubles. A stack of grids, strongly magnetized by a direct current coil provides extremely high efficiency of removal of magnetic particles. Ample "shakedown" is insured by an eccentric-weight vibrator. Two models — from 25 to 1000 cu. ft. per hr. capacity. For complete information . . .

Send for BULLETIN 46-E
S. G. FRANTZ CO., Inc.

P. O. Box 1138, Trenton 6, N.J.

RENTAL PLAN
Prove the efficiency of the FRANTZ FERRO-FILTER on your operation at low cost. Write for details.



When inquiring check CP 6799 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Styrene

(Continued from page 7)

built up. Chemists rolled up their sleeves and learned to use the commercial molding machines which had been installed at the Midland plant. The sample combs and other plastic gadgets they produced were used to interest plastics people in the new material. Their success in this venture earned polystyrene the nickname of "the pig iron of the plastics industry." And this light, low-cost, thermoplastic material had much to do with actually starting the "plastic age."

Though not much has been said about them yet, Dow researchers are working on still new outgrowths of styrene chemistry. This work, growing out of the laboratory and pilot plant studies of J. L. Amos, K. E. Coulter, R. R. Dreisbach, H. G. Hornbacher, W. E. Roush, F. J. Soderquist, A. C. Wilcox, C. C. Schwegler, and many others, led to commercial production of three other members of the styrene family: alpha methylstyrene for use in plasticizers and plastics; divinyl benzene for use along with styrene in the manufacture of ion exchange resin beads; and finally, vinyl toluene, which is useful both in plastic applications and as an excellent modifier of drying oils for paints and varnishes.

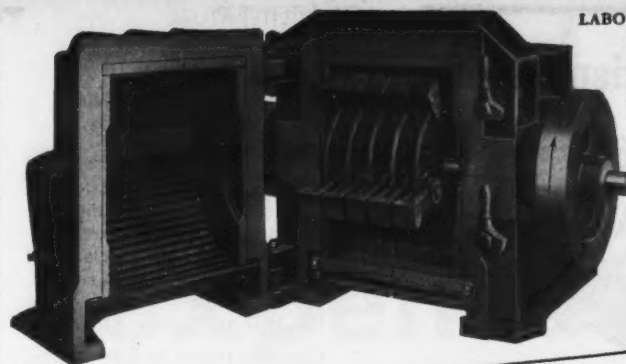
Vinyl toluene received commercial development first because of its known advantages in drying oil systems, and secondly because of the critical benzene shortage of the past few years. While the benzene situation has eased, vinyl toluene can stand alone because of certain intrinsic advantages over styrene. A \$10,000,000 plant to manufacture vinyl toluene began operations very near the 12th anniversary of Pearl Harbor. The jump from a pilot plant to this full scale plant was even larger than the jump in styrene production at the start of World War II.

Styrene and its petrochemical cousins seem to be in the area of greatest interest in the chemical industry today. The ends they have achieved certainly justify their position there. In fact, when we visualize the "world of the future" — even through the eyes of a designer of "tomorrow's dream home," or automobile, or radio, *ad infinitum* — it is significant that polystyrene and synthetic rubber are often the materials that permit our dreams to come true. Thus our lives and the lives of our children will be influenced by the styrene development in a way which is just as real as the ways of thinking which came out of the renaissance.

Depicts variety of accessories for pneumatic instruments

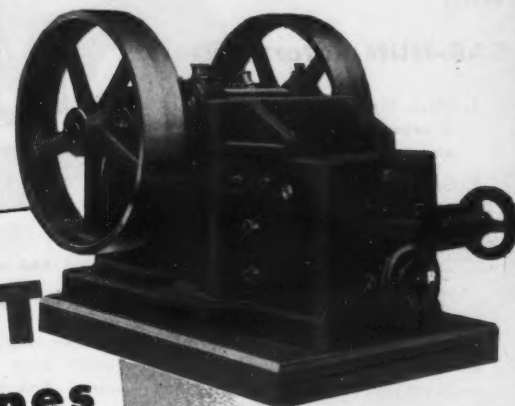
Wide variety of accessories for pneumatic control applications are included in 16-page, 2-color catalog. List contains air pressure regulators, air filters, pneumatic relays, control by-pass panels and many other types of equipment.

Cat 8950 is issued by Minneapolis-Honeywell Regulator Co., Industrial Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6800, pages 2 and 3.



LABORATORY SWING-SLEDGE MILLS

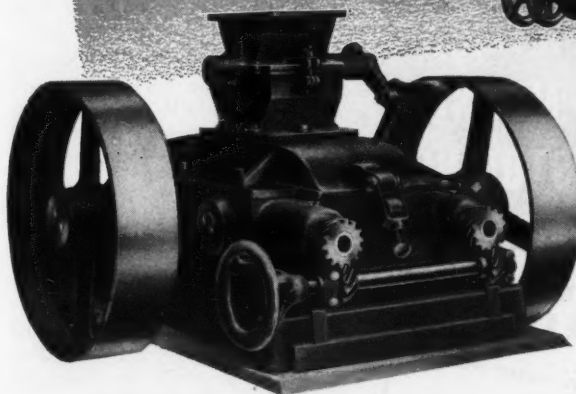
Capable of reducing soft, moderately hard and tough or fibrous materials to any degree of fineness between 1 in. and 20 mesh. The patented "Open-Door" feature permits ready accessibility for cleaning.



LABORATORY JAW CRUSHERS

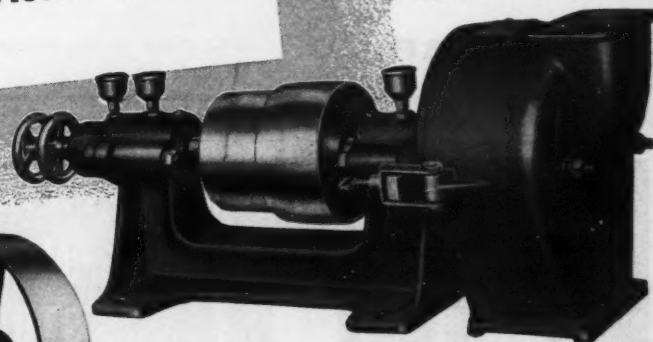
Special Roll Jaw action simplifies close regulation of the product with capacities varying from 300 or 400 lbs. per hour at finest settings, to 1000 or 2000 lbs. when opened for coarser work. Each part of the crusher is accessible for quick and easy cleaning.

STURTEVANT Laboratory Machines Assure Quality of Products Fast - Economical - Accurate



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First designed especially for laboratory sampling work, Sturtevant Crushing Rolls are used regularly in many plants where there are limited outputs. Range of output for the 8 x 5 size is from 1/2 in. to 20 mesh — and for the 12 x 12 size from 3/4 in. to 20 mesh.



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of full size machines plus extra accuracy and wider range of adjustment. The "Open-Door" accessibility permits quick, thorough cleaning . . . prevents the possibility of previous batches from contaminating new samples.

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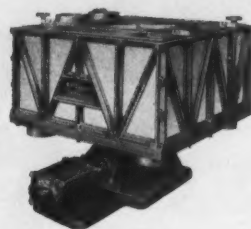
Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 6801 on handy form, pgs. 2-3

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3. Choice of Outlet Locations.
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When inquiring check CP 6802 on handy form, pgs. 2-3

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ENGINEERING CORPORATION

902 Alsop Square, Milldale, Connecticut

When inquiring check CP 6803 on handy form, pgs. 2-3

NEW LITERATURE

Reference guide describes hand-electric trucks

Manufacturer's reference guide on material handling equipment describes latest improvements, illustrates various features, sizes, models and complete specifications on single-stroke, multi-stroke and hand electric power lift trucks.

Cat 35 is issued by Lift Trucks, Inc., Dept. CP, 2425 Spring Grove Ave., Cincinnati 14, Ohio. When inquiring reader may simply specify CP 6804 on handy Reader Service slip located between pages two and three.

Nylon and steel combined to make rope

High tensile steel strands and nylon jacket make strong rope with corrosion and fatigue resistant qualities. Combination of high electrical resistance, non-abrasiveness of smooth outer coat, and strength offered by steel core are explained in 8-page bulletin. Sample of rope comes with bulletin.

Bul "Wirelon Wire & Nylon" is issued by Rochester Ropes, Inc., Dept. CP, Culpeper, Va. When inquiring specify CP 6805 on handy form, pages 2 and 3.

Issue Blue Book on electric generators

General information on selection of engine driven generating plants is given in pocket-size booklet. Basic differences in AC, DC, and battery charging are outlined and history of their development traced.

Types of engine cooling, starting methods, and prime movers furnishing mechanical power for driving the generator are examined.

Blue Book is available from D. W. Onan & Sons, Inc., Dept. CP, University Avenue, S. E. at 25th Street, Minneapolis 14, Minn. When inquiring reader may simply specify CP 6806 on handy Reader Service slip located between pages two and three.

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COMPLETE LINE OF
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When inquiring check CP 6807 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FUNDAMENTAL RESEARCH

(Continued from page 5)

The idea of *applied* research seems to have been adequately sold, but, speaking for the country as a whole, far too little effort is going into *basic* research. Most of our colleges are pinched for money and will today certainly find it easier to sell the services of their staffs for work in applied research, directed to some specific end, than for work in basic research which may or may not lead to useful applications. Not only this, but even the field in which its applications might lead is unpredictable.

One of the best examples that I can give as showing how fundamental research can be made to pay, is that of Dr. Langmuir's work in the two fields of thermionic emission and gaseous heat conduction. From one, we have our whole family of vacuum tubes, and from the other, the incandescent lamp.

Everybody can see tangible results, but they can easily forget the basic research which established the new facts or principles making these results possible. It is most desirable that our educational institutions, our scientific societies, our industrial organizations, our labor organizations, and our government encourage and support basic scientific research. With sufficient basic and applied research, we can confidently hope to maintain and even raise our standard of living.

Looking still further into the future, may not a continuous supply of new frontiers, provided by basic research prevent the stagnation which might otherwise develop in our Western civilization? It's clear that there have been various causes contributing to the decline of different civilizations. It seems equally clear that a constant supply of new horizons would not of itself guarantee the continued existence of a civilization. It might well prolong it, however, and would certainly add zest to living.

Boosts power without adding weight

How superchargers boost power of diesel and gasoline engines is subject of 4-page descriptive bulletin.

Bul 153 is available from Miehl-Dexter Supercharger Div., Dexter Folder Co., Dept. CP, Racine, Wis. When inquiring specify CP 6808 on handy form, pages 2 and 3.

Reports on synthetic fabrics

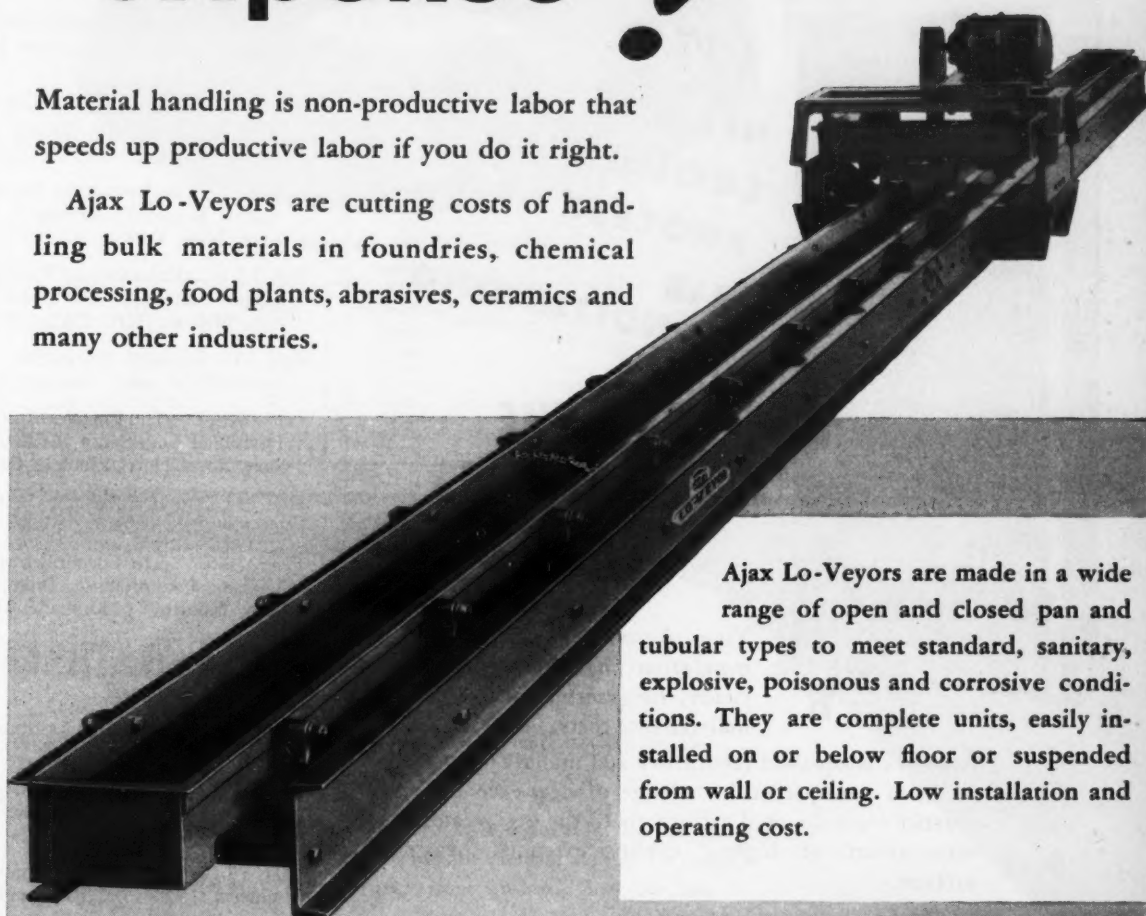
Caustic and acid resistant qualities of Orlon and Dynel when used in work clothes is examined in 15-page catalog. Test conducted by the Bureau of Ships of US Navy is explained and technical properties of both fabrics are included.

Cat "Acid and Caustic Resistant Industrial Apparel" is available from Worklon, Inc., Dept. CP, 253 West 28th St., New York 1, N. Y. When inquiring specify CP 6809, pages 2 and 3.

material handling expense ?

Material handling is non-productive labor that speeds up productive labor if you do it right.

Ajax Lo-Veyors are cutting costs of handling bulk materials in foundries, chemical processing, food plants, abrasives, ceramics and many other industries.



Ajax Lo-Veyors are made in a wide range of open and closed pan and tubular types to meet standard, sanitary, explosive, poisonous and corrosive conditions. They are complete units, easily installed on or below floor or suspended from wall or ceiling. Low installation and operating cost.

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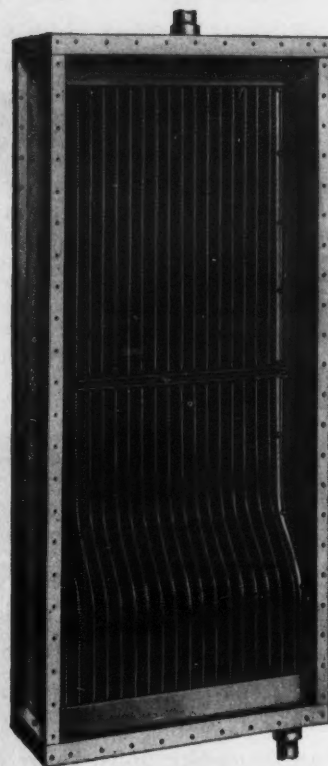


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When inquiring check CP 6810 on handy form, pgs. 2-3

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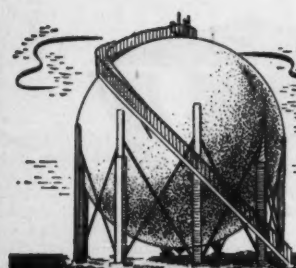


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*Aerofin is sold only by manufacturers of
fan-system apparatus. List on request.*

When inquiring check CP 6811 on handy form, pgs. 2-3

Convention & Exhibit

Schedule

1954

Feb. 1-5. American Society for Testing Materials, Committee Week, Shoreham Hotel, Washington, D. C.

Feb. 3-5. Ninth Annual SPI Reinforced Plastics Division Conference, Society of the Plastics Industry, Inc., Edgewater Beach Hotel, Chicago, Ill.

Feb. 4. The Instrument Society of America, 9th Annual Regional Conference, Hotel Statler, New York, New York.

Feb. 12-13. Federation of Paint and Varnish Clubs, Finance Committee and Board of Directors Meetings, Melrose Hotel, Dallas, Texas.

Feb. 15. National Association of Corrosion Engineers-ASTM joint meeting, Dallas, Texas.

Feb. 18-19. The Chemical Institute of Canada, 6th Divisional Conference, Analytical Chemistry Division, Royal Hotel, Guelph, Ontario.

Feb. 23. American Institute of Chemical Engineers-ASTM joint meeting, Los Angeles, Calif.

Feb. 25-26. The Chemical Institute of Canada, 8th Divisional Conference, Protective Coatings Division, Montreal (25th) and Toronto (26th).

Mar. 1-2. The Chemical Institute of Canada, 3rd Divisional Conference, Chemical Engineering Division, Montreal.

Mar. 8-10. American Institute of Chemical Engineers, Washington, D. C.

March 11-13. Air-Conditioning and Refrigeration Institute, Educational Conference, Municipal Auditorium, Long Beach, Calif.

Mar. 15-19. National Association of Corrosion Engineers, 1954 Conference and Exhibition, Kansas City, Missouri.

Mar. 17-18. Commercial Chemical Development Association, Annual Open Meeting, Hotel Statler, New York City, New York.

Mar. 24-Apr. 1. American Chemical Society, 125th national meeting, Kansas City, Missouri.

April 5-6. The Society of the Plastics Industry (Canada) Inc., 12th Annual Conference, Mount Royal Hotel, Montreal, Canada.

Apr. 5-8. American Management Association, 23rd National Packaging Exposition, Auditorium, Atlantic City, New Jersey.

Apr. 14-16. American Chemical Society, Division of Rubber Chemistry, 65th meeting, Brown Hotel, Louisville, Kentucky.

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to Stay in One Piece**



Strong, lightweight Pla-Tank Resin-Bonded Glass Laminate Tanks are now — and always have been — molded in one piece. Several years ago we started making tanks over a mold after our engineers recommended this as the best production method. Since then, our customers have been telling us that you can't beat one-piece construction.

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269 STANDARD SIZES AVAILABLE

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Aldehyde
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Analyzers
Oxygen
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Bag Closin
Bag Packer
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Water-pro
Ball Beatin
Barrels
Batch Meas
Baths, Jar
Bearings, C
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Semi-auto
Case Sealers
Casters

FEBRU

Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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TONKA WATER HOSE
Spec. L-47

SIZE	BRAID	WORKING PRESSURE	O.D.	WEIGHT 100 FT.
1/2"	2	300 lbs.	15/16"	25 lbs.
5/8"	2	250 lbs.	1- 1/16"	30 lbs.
3/4"	2	250 lbs.	1- 3/16"	35 lbs.
3/4"	3	300 lbs.	1- 9/32"	41 lbs.
1 "	2	250 lbs.	1- 7/16"	45 lbs.
1 "	3	300 lbs.	1- 1/2 "	50 lbs.
1-1/4"	3	250 lbs.	1-27/32"	72 lbs.
1-1/2"	3	200 lbs.	2- 3/32"	83 lbs.

Ordinary Water Hose?

Not on your life! This is a picture of a 50-foot coil of Republic's TONKA—the water hose that *will not kink!*

TONKA is noted for its dependability. It is a durable hose of braided construction and is especially suitable for general service in industrial plants, for contracting work, street washing, deck use, etc.

TONKA is just one of the many specialized hoses produced by Republic Rubber. Your local Republic Distributor stocks TONKA in lengths up to 500 feet, in sizes up to and including 1-1/2 inch. If his name is not listed in the yellow pages of your phone book, write directly to us for information on any Industrial Rubber Product.

"Quality Hose Builders for Over 50 Years"



REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

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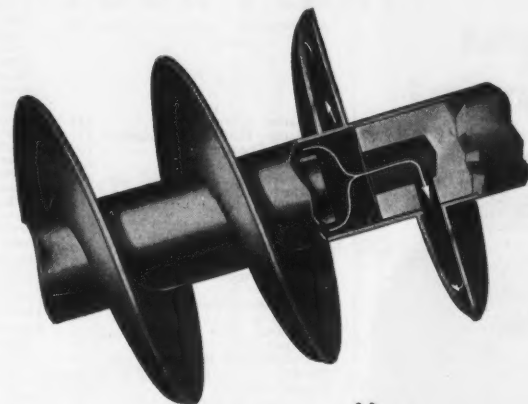
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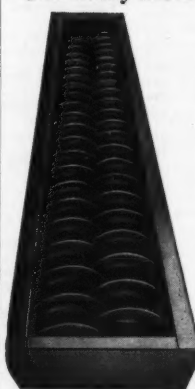
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(HOLLOW-FLITE)

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Do you have processes where slurries, solids, pulps or pastes must be cooled or cooked? Do you know you can now handle such processes—in continuous flow—in as little as 1/5th the space required by other types of heat exchangers—and with many other important advantages?

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Reg. T.M.



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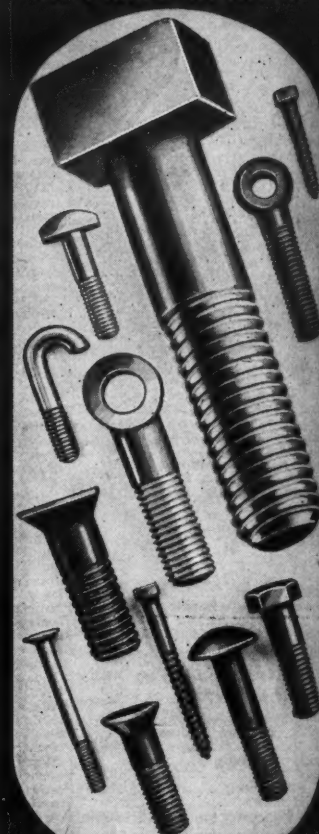
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by an
exclusive method



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THE BOLT MAN

MANUFACTURING COMPANY

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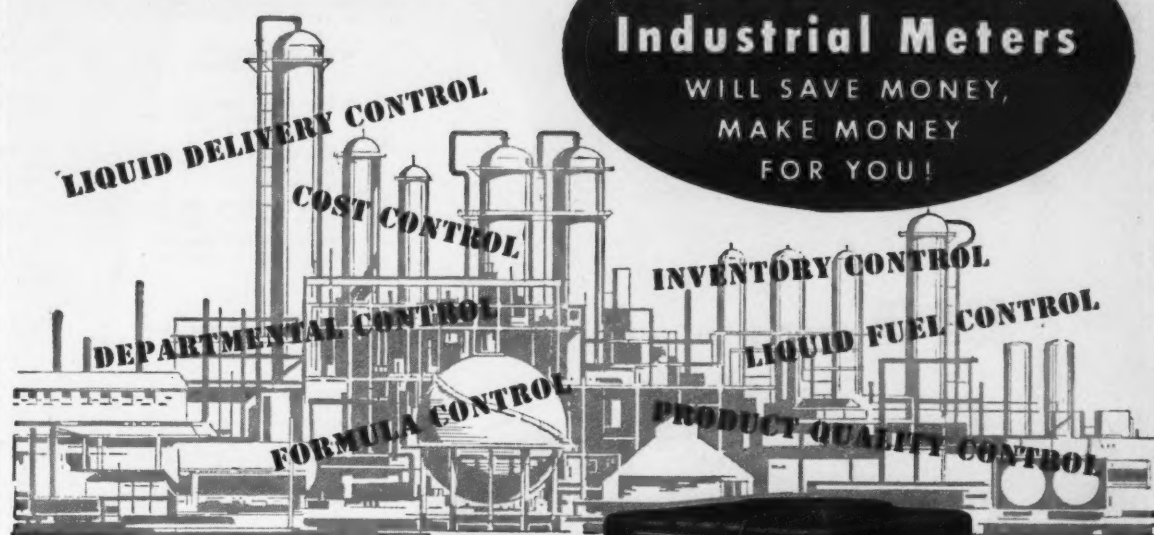
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MAKE MONEY
FOR YOU!



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the all-revolving
rotor construction.

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(Name of Liquid)

Pipe Size _____

Working Pressure _____ psi. Temperature _____ °F max.

Max. Flow Rate _____ gpm. Min. Flow Rate _____ gpm.

YOUR NAME _____

COMPANY _____

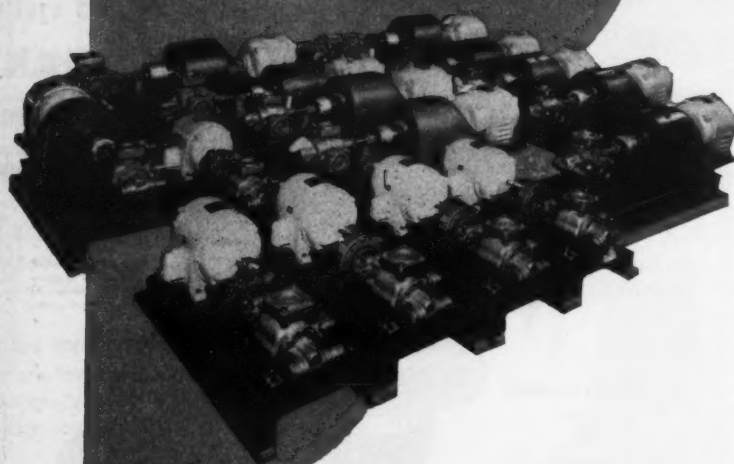
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BIG ORDER...
for a
BIG PROCESSING INSTALLATION



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ROPER

Rotary Pumps

GEO. D. ROPER CORPORATION
742 BLACKHAWK PARK AVENUE, ROCKFORD, ILLINOIS

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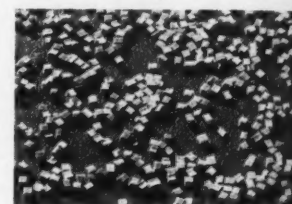
YOUR MOLDING

TAYLOR-STILES

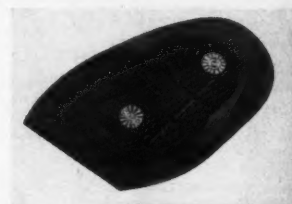
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CUTTERS

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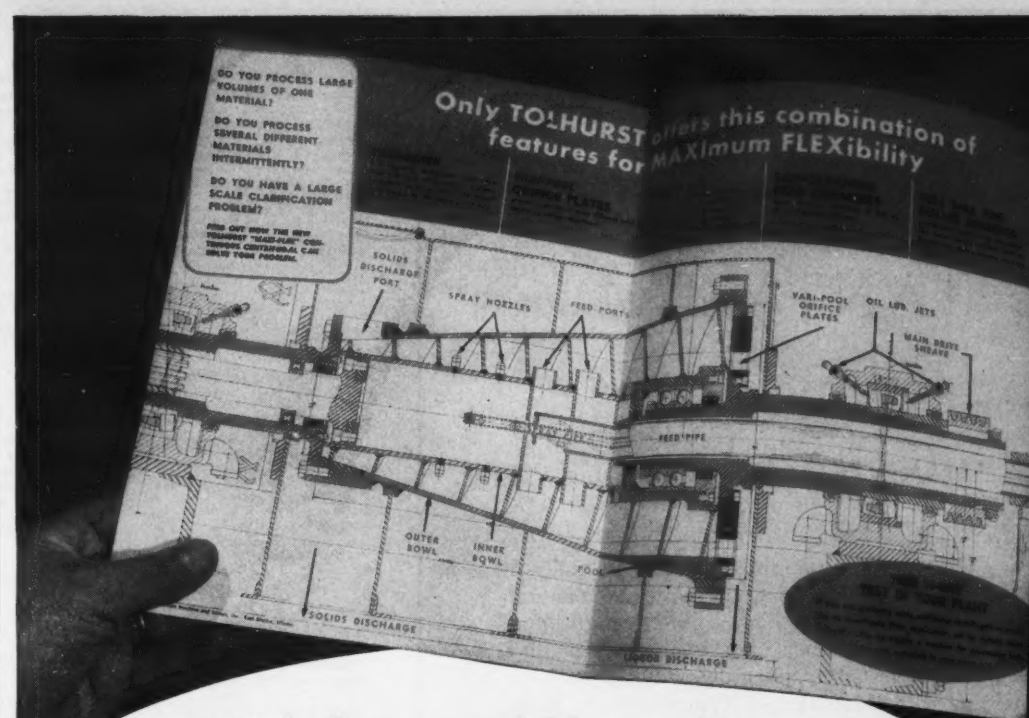
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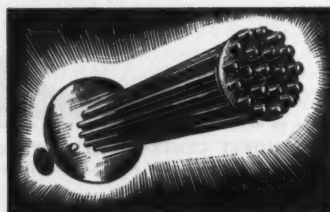
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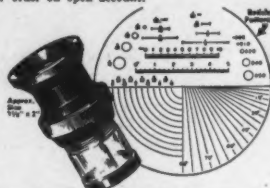


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ESSING

"That's Interesting"

Ah-put

Thus is snow in general described by the Eskimos (who should know). However, they have some other more detailed terms: Ah-ki-lu-kak (soft snow); I-ya-go-vak-juak (snow crystals); Ka-nik (falling snow); Ku-ah-li-rak (snow freezing as it falls); Ma-rak (wet snow); Mau-yak (soft, deep snow); Ti-vi-gut (snow drifts); Ne-ta-ka-nak (hail); and Ki-muk-vik (uneven snow after drifts). May we suggest adding Nuts-tu-ut (for when dogsled stuck in Ah-put)? (*The Ohmite News*)

Caligula's concrete

Samples of 2000-year-old concrete — still in serviceable condition — have been recovered from an ancient Roman wharf. The piers from which the concrete came are reported to have been submerged since the reign of Emperor Caius Caesar Caligula, A.D. 12-41.

Sterilization in weiner casings

Frankfurter casings are now being used in sterilizing medical instruments. Weinie-Pak cellulose casings, a product of Transparent Package Co. of Chicago, provide individual packaging for instruments to be sterilized. Material allows permeation of steam, but serves as a barrier to bacteria and contamination, thus keeping delicate needles, syringes, and catheters sterile until they are ready to be used.

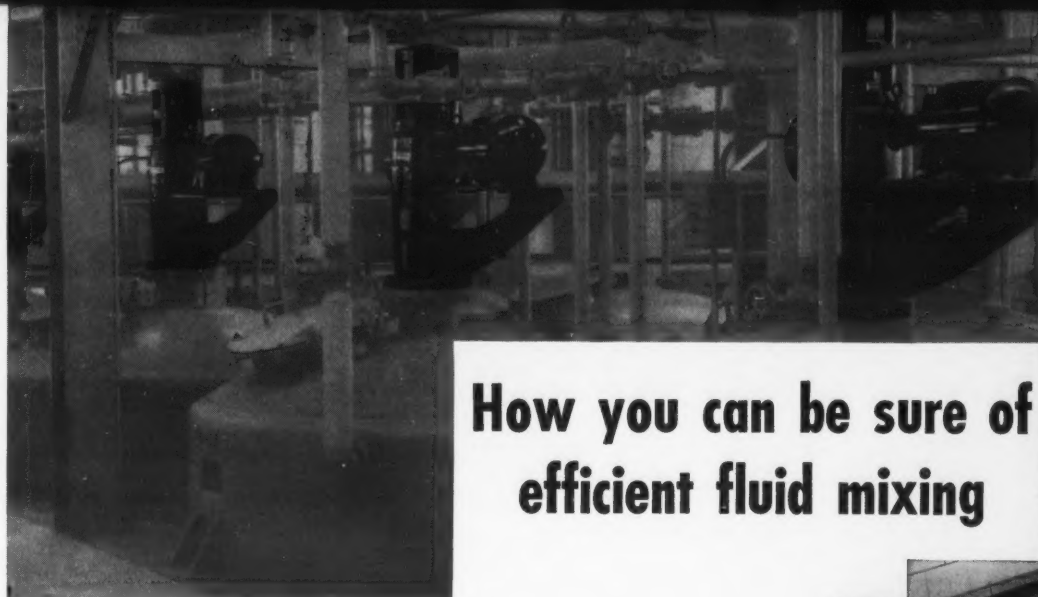
Sweet dresses

Reports have it that a group of men in the Philippines have formed a \$15,000,000 corporation to make cellulose, which is the base for rayon, from bagasse, the fibrous part of sugar cane. (*Cutting Topics*)

Colorful proof

In order to prove the results of his cloud-seeding experiments, a Japanese rainmaker colors his rainfalls green. (*Dyelines & Bylines*)

For more information on product at right, specify CP 6829 ... see information request blank between pages 2 - 3.



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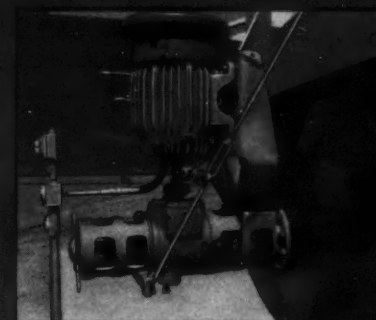
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